

Consumers' Research Bulletin



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Consumers' Research Bulletin

OFF THE EDITOR'S CHEST

WHEN a consumer buys a product that he likes and wants to get more of the same, how does he go about finding it, if the store where he purchased it no longer carries it? Frequently CR receives letters from subscribers who have suddenly found that a product they were accustomed to getting in a certain store is no longer available and the store management is unable or unwilling to tell them where they might buy it, or even get information about it. Recently an advertising journal's columnist reported that women were annoyed by the fact that when they wanted to write the manufacturer of some product for information or to make a complaint only the name of the manufacturer or distributor and city would be given on the label. Thus a letter addressed to the Blank Corporation, Chicago, Illinois, or John Doe, Inc., New York City, would be returned by the post office for better address.

It is often possible for consumers in large cities where telephone directories of cities throughout the United States are available or where the public library has trade directories to get a complete address, but only a very persistent consumer, with time to spare, could be expected to go to this trouble.

We ourselves are often asked by consumers who have no access to trade directories for the address of some particular company. Several years ago in an early test of hand lotions, one of the recommended brands happened to be a Rexall brand merchandised by the United Drug Company. One persevering subscriber from Boston, Mass., wrote us indignantly that he had tried in more than half-a-dozen drugstores in the city and had not been able to obtain it. It happened that the United Drug Company's headquarters was in Boston and, of course, the product was readily available in all United Drug stores. Had the correct name of the distributor and the street address been listed on the label, our subscriber could have called up the company or written a brief note and learned the location of the Rexall store nearest him.

On the other hand, it is sometimes of little value to have the company's full address given because too many firms, large and small, take the position that they are not interested in serving so small a unit as a single consumer. About two years ago one of our staff came across the *Keep-Shape* women's shoe trees (listed

(Continued on page 19)



MARCH 1953

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Consumers' Research functions to provide unbiased information on goods bought by ultimate consumers. For their benefit (not for business or industry) and solely with the funds they provide, CR carries on tests and research on a wide variety of goods, materials, and appliances, and publishes the findings in CR Bulletin. Consumers' Research is a non-profit institution, and is organized and operates as a scientific, technical, and educational organization.

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Symbols used to indicate sources of data and bases of ratings: A—recommended on basis of quality; AA—regarded as worthy of highest recommendation; B—intermediate with respect to quality; C—not recommended on basis of quality; or—information from Consumers' Research's own tests or investigations; 1, 2, 3—relative prices, 1 being low, 3 high. Note that price and quality are completely differentiated in CR's listings; a quality judgment is independent of price; 52, 53—year in which test was made or information obtained or organized by the staff of Consumers' Research.

It will be advantageous if you will, whenever possible, send prompt notice of change of address at least 5 weeks before it is to take effect, accompanying your notice with statement of your old address with name in full. At least a month's notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel. *CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.

***For a brief cumulative index of the 1953 BULLETINS preceding this issue, see page 26.

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The Consumers' Observation Post

HAIR LACQUERS, or the so-called liquid hair net, particularly those sold in dispensers that operate under pressure, have been denounced by safety-minded fire officials in recent months. Many of the preparations were found to be highly flammable, and although notice to that effect appeared on some containers, at least one fire commissioner considered the word of caution too inconspicuous. In Buffalo, the fire commissioner claimed that if a woman sprayed one of the flammable lacquers on her hair while she had a lighted cigarette in her mouth, her hair might go up in flames. The job of applying hair lacquer is not so easily carried out that it can be done conveniently while lighting or smoking a cigarette, but it is nevertheless a good idea to require that flammable lacquers carry a prominently displayed warning label putting the users on notice as to the dangers from contact with an open flame.

* * *

ENGLISH BICYCLES are increasing in popularity in the United States, reports The Wall Street Journal. One of the chief factors in their appeal over U.S. bikes is the lighter weight, which makes them easier to pedal. Raleigh bicycles range from 28 to 36 pounds as against 45 to 50 pounds for U.S. makes. Prices for the English bikes run from \$40 to \$50 compared with \$45 to \$89 for domestic bicycles. The merchandise manager of a large American store in a South American country admitted that he was obliged to stock English bikes because there simply was no demand for the heavier U.S. bicycles.

* * *

TOP-PRICED FURNITURE is selling very well, according to a report in The Wall Street Journal. The newspaper's investigations indicated that the buyers of high-priced furniture were not wealthy families, but chiefly young couples purchasing one or perhaps two pieces at a time. Increased interest in quality furniture is ascribed to the home magazines, which, as one manufacturer put it, "used to tell readers how to make a living room suite out of orange crates. Now they show them quality stuff." The Wall Street Journal lists the following factors as partly accounting for the difference between a \$200 sofa and one selling for \$1200:

Length	78 inches	108 inches
Fabric	8 yards	19 yards
Fabric Price	\$3 a yard	\$15 a yard
Lumber	crating grade, unfinished	Northern Grey Elm sanded and hand rubbed
Labor	15 hours	80-100 hours

Unfortunately no one has yet invented a fluoroscope that will enable the prospective purchaser to look through the upholstery of an expensive sofa to make certain that he is getting carefully worked and smoothly finished Northern Grey Elm, not crating lumber.

* * *

NYLON STOCKINGS are expected to make their appearance any day now in "sealed vacuum plastic packages." First to try the new technique is Gotham Hosiery Co. It is not so much a problem of keeping the stockings from spoiling, but rather of preventing women from running their hands through the hose and leaving it mussed or snagged from rings and finger-nails. We can no doubt look forward to hearing about an advertising campaign to stress the importance of having hose "vacuum fresh" like the morning coffee.

AS THE SEASON FOR PUTTING AWAY WINTER WOOLENS approaches, the problem of how to protect them against moth damage must be faced. Late last year announcement was made of a new formula based on the use of DDT which the Quartermaster Corps had found to be effective for protecting stored woollens against fabric pests. According to one announcement, the woollens are to be hung on the clothesline and thoroughly sprayed until the clothing, rugs, or draperies are thoroughly saturated. The press release announcing the new mothproofing product may have left the impression that it was certainly effective and easy to apply. The casual reader, however, should be warned that the tests made by the U.S. Department of Agriculture and the Army Quartermaster Corps applied to stored woollens only. Clothing and other woollens in regular use require a treatment at seasonal intervals and after each dry cleaning or washing. As the National Pest Control Association pointed out in one of its bulletins, it is essential that all of the cloth to be protected receive a thorough application at the same time avoiding an excess which may show as a white deposit on dark woollens. Applying the material correctly would not be easy for the homemaker and she should take precautions to wash face and hands with soap and water to remove all traces of the spray. Another mothproofing preparation developed by the U.S.D.A., called EQ-53, was announced late last year, to be available in the spring. Also based on the use of DDT, it presents potential dangers to the careless user that are considered by CR to be too great to offset any possible advantages from its use in the home.

* * *

EGG SHAMPOOS really do have some egg in them, but the amount is infinitesimal, according to the Food and Drug Administration. According to one calculation there was one one-hundred-and-eightieth of one egg in a shampoo. There is no evidence, of course, that it will do a lady's hair any harm - or good - if she desires to use it.

* * *

ADVICE TO THE INCOMING ADMINISTRATION: One very effective way to reduce prices is to reduce the government's "take," and cut or eliminate excise taxes. Automobiles, household appliances, cosmetics, television sets, and motion pictures will all be cheaper in price if excise taxes are reduced. Such action might even pep up lagging sales in some fields.

* * *

WHEN POCKET OR WRIST WATCHES are shipped to a factory or distant repairman for attention and adjustment, special care is needed in packing to make certain that they are not damaged enroute. The watch should be wrapped in tissue paper and placed in a small box, which in turn should be placed in the center of a heavy cardboard box at least 6 inches on each side, carefully padded with crumpled newspaper. It is reasonable to expect a year's guarantee on a watch or clock repair job, particularly one involving considerable cost.

* * *

THE MANY CHLOROPHYLL COMPOUNDS sold to be taken internally to prevent body odors have been widely advertised and extensively discussed by scientists and professional men. The scientific approach to the chlorophyll fashion was well summed up by Professor Alsoph H. Corwin, head of the chemistry department at Johns Hopkins University in an address before a meeting of the American Chemical Society in which he remarked, "It furnishes chemists, physiologists, and other scientists with a lot of good clean fun. For other purposes, we are not certain that it has any value." Dr. Corwin also pointed out that the commercial preparations of chlorophyll were copper derivatives of natural chlorophyll and that excessive intake of copper might lead to liver damage. He indicated the need of further studies of this angle. The Food and Drug Administration is expected to look into the question further, although its studies on a small scale about a year ago revealed no harmful results from taking chlorophyll preparations.

(The continuation of this section is on page 33)

1953 Automobiles



Plymouth Cranbrook

Plymouth Cranbrook

This appears to be a very good car with no serious faults. Its chief drawback is its somewhat higher price (\$150, or 9% above *Chevrolet*), and its somewhat higher depreciation.

A (Tentative)

Plymouth Cranbrook. \$2003.50 delivered N.Y.C.
Radio, \$101; heater, \$78.

CR'S FINDINGS ON ROAD TESTS

Speedometer was accurate. **Odometer** was inaccurate by about 4% (100 miles would be recorded as 104 miles).

Acceleration time was about average for cars in this price class, in both speed ranges: from 20 to 50 m.p.h., 14.3 sec.; from 40 to 60 m.p.h., 10 sec. Acceleration was improved over the sample of the 1952 model tested.

Gasoline mileage under test conditions was relatively good: at 30 miles per hour, 22.6 miles per gallon; at 50 m.p.h., 18.8 m.p.g.; somewhat better than that obtained on last year's models. (These are not the same figures as miles per gallon under average road conditions; however, the 50 m.p.h. figure for gasoline consumption, if multiplied by 0.8 or 0.9, will often be close to that obtained in normal driving.)

Riding comfort was judged very good at both high and low speeds, particularly with passengers in the rear

seat. The bouncing motion present in last year's car, which might have been objectionable to rear-seat passengers subject to car sickness, appears to have been largely overcome, for the riding quality of this year's *Plymouth* on rough roads was quite satisfactory. Cornering ability (i.e., ability of car to hold the road at high speeds when taking a curve) was good, and car handled very easily.

OBSERVATIONS AND CONCLUSIONS

The car tested was equipped with standard 3.73 to 1 rear axle ratio, with no overdrive. Steering factor, 3.6, somewhat below today's average, but most drivers liked the quick steering action. The hand brake, as on all Chrysler cars, operates on the drive shaft, which is open to certain objections (from a safety standpoint). In general, the car was roomy except that headroom was insufficient for a tall person wearing a hat (because of higher-than-normal

SPECIFICATIONS

Engine

6 cylinders, "L" head
Bore, 3-1/4 in.; stroke, 4-3/8 in.
Piston displacement: 217.8 cu. in.
Brake horsepower (rated): 100 at 3600 rpm.
Taxable horsepower: 25.35
Compression ratio: 7.1 to 1
Automatic choke
Crankcase oil capacity: 5 qt.
Cooling system: 13 qt. plus 1 qt. for heater

Chassis, etc.

Wheelbase: 114 in. (4-1/2 in. less than 1952)
Over-all length: 189 in. (5 in. less than 1952)
Width: 73-1/2 in.
Height: 61-3/4 in.
Gear ratio: 3.73 to 1 (4.1 to 1 with overdrive)
Tires: 6.70 x 15 (adequate)
Brake area: 158 sq. in.
Brake factor: 41 (adequate)
Frame: box-type side rails, 4 cross members
Road clearance: 7-3/8 in. minimum
Turning diameter: 39 ft. (better than average)

Other details

Battery: 100-amp.-hr.
Gasoline tank: 17 gal.
Windshield wipers: 1-speed electric
Shipping weight: 3070 lb.
Car weight distribution: 54% on front wheels

seats). Interior light was turned on by opening of right front door or by switch on the post (it is desirable that it should be switched on by opening of either front door). Fresh-air inlet was located, in a position common to many of today's cars, on right side of front; had separate cowl ventilator. Heater and defroster were satisfactory. Front fenders, bolted; rear fenders, welded. Vision over hood, excellent; to rear, very good. The spare tire was readily accessible and the trunk space was adequate. The glove compartment and ash tray were at a position within easy reach of the driver (a desirable improvement).

Starter is operated by turning the ignition key to the right. This key also locks the front doors, which is a desirable arrangement; a separate key is provided for trunk and glove compartment. Wheels and tires were readily accessible for servicing. Gasoline tank filler pipe was almost horizontal, making it difficult to fill the tank without spillage. In driving, there was a strong smell of gasoline in the car, particularly when a side window was open, a fault which has been noted on some other makes of cars (not necessarily true of all specimens of a given make, but prospective purchasers will wish to check on the point).

Note: A road test of a *Plymouth* with overdrive will be reported in a later BULLETIN.

Chrysler New Yorker

This is a good car, well finished, of good appearance, and undoubtedly would be satisfactory to many who buy in this high price range. Its depreciation (yearly loss of turn-in value) is likely to be high. It can be purchased only with *Fluid-Matic* or *Fluid-Torque* drive, which CR considers less desirable than the *Hydra-Matic* offered on some General Motors cars. *This car with Fluid-Torque drive is given a tentative B+ rating; with the Fluid-Matic drive the tentative rating would be B.*

B+ (Tentative)

Chrysler New Yorker C 56-1. \$3486 delivered N.Y.C.

Heater, \$78; radio, \$101; *Fluid-Torque* drive, \$105; power steering, \$199; *Solex* glass, \$21.50; back-up lights and turn signals are standard equipment.

CR'S FINDINGS ON ROAD TESTS

Speedometer at indicated speed of 20 m.p.h. was correct; at indicated speed of 35 m.p.h., actual speed was 34.3 m.p.h.; at 50 m.p.h., 48.

Odometer was approximately correct.

Acceleration time from 0 to 30 m.p.h., 6.4 sec., good; from 20 to 50 m.p.h., 8.5 sec., very good; from 40 to 60 m.p.h., 9.8 sec. in fourth gear, good.

Gasoline mileage under test conditions: at 30 m.p.h., 19.3 m.p.g.; at 50 m.p.h., 16.9 m.p.g.

Riding comfort on rough surfaces at low speed was very good; at moderate speeds there was some pitching and road shock noticeable to rear-seat passengers. General roadability and stability on curves were good. The car had a slight tendency to wander, which may have been due to its power steering; otherwise the car was very easy to handle.

Fluid-Torque drive: The advantages of the *Fluid-Torque* drive over the *Fluid-Matic* drive are in improved performance in starting from rest and on hills where the increased torque available makes it less often necessary to "kick down" to third gear. The delay period occurring in the shift from third to fourth gear, a disadvantage of the *Chrysler* type of transmission, was quite noticeable. For further comments, see *Dodge V-8 Gyro-Torque* (Feb. '53 CONSUMERS' RESEARCH BULLETIN). No trouble was experienced with this car by failure to "kick down" from fourth to third gear, as occurred with the 1953 *Dodge V-8* of the same manufacturer.

OBSERVATIONS AND CONCLUSIONS

Fluid-Matic drive is standard equipment, but car tested had *Fluid-Torque* drive (which is available at \$105 extra) and power steering. Steering factor, 3.45 ("fast" steering; satisfactory with power steering). Hand brake operates on drive shaft, which is an unsatisfactory arrangement in some respects. In general, though the interior of this car is adequate as to space and comfort, a person seated in the middle of

SPECIFICATIONS

Engine

8 cylinders in V arrangement
Overhead valves
Bore, 3-13/16 in.; stroke, 3-5/8 in.
Piston displacement: 331 cu. in.
Brake horsepower (rated): 180 at 4000 rpm.
Taxable horsepower: 46.51
Compression ratio: 7.5 to 1
Automatic choke
Crankcase oil capacity: 5 qt.
Cooling system: 25 qt. plus 1 qt. for heater
Hydraulic valve lifters

Chassis, etc.

Wheelbase: 125-1/2 in.
Over-all length: 211 in.
Width: 76-3/4 in.
Height: 62-3/4 in.
Gear ratio: 3.54 to 1 with *Fluid-Matic*, 3.36 to 1 with *Fluid-Torque*
Tires: 8.00 x 15 (adequate)
Brake area: 201 sq. in.
Brake factor: 42 (satisfactory)
Frame: box-type side rails, 4 cross members
Road clearance: 7.9 in. minimum
Turning diameter: 42 ft. (about average)

Other details

Battery: 135-amp.-hr.
Gasoline tank: 20 gal.
Windshield wipers: 2-speed electric
Shipping weight: 4030 lb.
Car weight distribution: 55.5% on front wheels

the front seat would find the transmission floor hump quite uncomfortable for his feet on a long trip. Interior light switched on by the opening of any door (desirable). Fresh-air intake through cowl ventilator (good), with provisions to pass air either through the heater or to by-pass the latter. Full-length defroster slots. Front fenders, bolted; rear fenders, welded. Vision over hood, very good; to rear and sides, very

good. Spare tire readily accessible, and trunk space was adequate (sides of trunk, however, were not covered — a minor objection). Starter is operated by turning ignition key beyond "on" position. Wheels and tires readily accessible for servicing. Front seat adjustment could be improved; lacking an equalizer, it tended to become cocked on its tracks. This car used "regular" gasoline.

Household Synthetic Detergents

HOUSEHOLD SYNTHETIC DETERGENTS of the all-purpose type are intended primarily for the general family wash. They usually contain "builders" — materials added for special water softening or cleaning abilities — which make them more alkaline than "mild" synthetic detergents. Synthetic detergents have advantages over soap for washing in hard water because, unlike soap, they do not react with the chemicals which make water hard to form the insoluble precipitates known to the housewife as "hard water scum."

Five popular all-purpose synthetic detergents were evaluated for their effectiveness in soil removal and tendency toward minimum soil redeposition (graying action) by washing two different kinds of standard soiled cotton cloths in both hard and soft water at several concentrations of detergent. Since foam has a tendency to cushion the mechanical action of tumbler-type washing machines, which results in reduced cleaning efficiency, and because it makes extra rinsing necessary, tests were also made to determine the initial foaming capacity and the lasting qualities of the foam of each detergent.

Breeze, *Fab*, and *Surf* were found to be much alike in soil removal and soil redeposition. *Tide*, however, was slightly more effective than the other detergents in soil removal in both soft and hard water, and *Cheer* was slightly better than the others in anti-graying action in soft water. All the detergents tested gave voluminous stable foam when used at moderate or low concentrations in soft and hard water, except *Tide* which showed virtually no foam at the low concentration in hard water. (None of the five, however,

are represented as having a minimum tendency to produce suds.)

Each detergent contained sodium carboxymethylcellulose (sodium CMC), a chemical which helps to prevent the redeposition of soil from the wash water on the fabrics, and a fluorescent dye, which makes clothes look whiter by counteracting the yellow tint that often develops in a fabric. *Cheer* contained a small amount of blue dye, also.

A. Recommended

Tide (Procter & Gamble, Cincinnati) 29c for 1-lb.-3-oz. box. Soil removal: good at low, moderate, and high concentrations. Anti-graying: good in soft water; fair in hard water.

B. Intermediate

Breeze (Lever Bros. Co., New York City) 30c for 15-oz. box. Soil removal: fair at low and moderate concentrations; good at high concentrations. Anti-graying: good in soft water; fair in hard water.

Cheer (Procter & Gamble) 29c for 1-lb.-5-oz. box. Soil removal: fair at low, moderate, and high concentrations. Anti-graying: very good in soft water; fair in hard water.

Fab (Colgate-Palmolive-Peet Co., Jersey City, N.J.) 29c for 1-lb.-3-oz. box. Soil removal: fair at low, moderate, and high concentrations. Anti-graying: good in soft water; fair in hard water.

Surf (Lever Bros. Co.) 29c for 1-lb.-3-oz. box. Soil removal: poor at low concentrations; fair at moderate and high concentrations. Anti-graying: good in soft water; fair in hard water.

Two Television Receivers

CR is continuing tests on 1953 model TV receivers and will report on additional lines as soon as test results become available. Readers interested in up-to-date general information regarding the color TV and ultra high frequency problems should refer to the article beginning on page 5 of CR's December 1952 monthly BULLETIN.

Both receivers reported in the listings following carried the label of the Underwriters' Laboratories.

A. Recommended

DuMont, Model RA-164-165 Beverly (Allen B. DuMont Labs., Inc., Paterson, N.J.) \$350.

This DuMont television set was a sensitive receiver, of good design and workmanship; it would be a good choice for fringe area reception. The quality of its sound output was not outstanding.

Console, very well constructed cabinet, $\frac{3}{4}$ -in. mahogany veneer plywood. 18 tubes plus 2 rectifiers, a crystal detector, and 21-in. picture tube. Picture mask size, $18\frac{3}{4}$ in. wide, $13\frac{3}{4}$ in. high. Watts input, 195; approximate monthly operating cost,¹ 60c. Workmanship and quality of parts, good. Accessibility for servicing, very good. Frequency stability and interlace, very good. Picture stability, brightness, and resolution, good (over-all band widths, 3.75 mc.). Approximate sensitivity, 40 microvolts on low band, 45 microvolts on high band, both considered very good. Linearity and stability of sweep circuits, very good. Acoustical quality from 10-in. speaker on listening test, a little better than average for a console. Over-all electrical fidelity, down 3 db. at 150 and 8200 c.p.s. with a 5 db. rise between 2000 and 5000 c.p.s. (undesirable). Estimated tonal range, 125 to 7500 c.p.s.; the receiver was somewhat lacking in bass response. Sound power output, 1.8 watts at 10% distortion at 400 c.p.s., fair. Leakage current, a measure of potential shock hazard, 1.1 ma.; considered somewhat high but not sufficient in CR's opinion to warrant a lowered rating. The relatively high sensitivity, combined with a low noise level, would make this set quite satisfactory for fringe area reception. *DuMont models Ridge-*

wood, Shelburne, Milford, Wakefield, and Clinton are said to use a chassis similar to the Beverly. **2**

B. Intermediate

Hallicrafter, Model 1057U (Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24) \$340.

This Hallicrafter was a sensitive receiver, but not outstanding in performance, and not considered desirable for fringe area reception.

Table model with fairly good wood cabinet. 16 tubes plus rectifier, 2 crystal diodes, 2 selenium rectifiers, and 21-in. picture tube. Picture tube has a dull-finished face and a sloping safety glass cover — both desirable for reducing reflections from room lighting. Picture mask size, $17\frac{7}{8}$ in. wide, $13\frac{1}{4}$ in. high. Watts input, 140; approximate monthly operating cost, 45c — low. Apparent quality of parts, good. Accessibility, for servicing, considered to be only fair; serviceman would need to remove chassis from cabinet to check 4 of the tubes and the 2 crystals. Frequency stability, very good. Picture stability, good. Resolution, only fair; the deficiency was due in part to inability to adjust the focus control sharply so that the raster lines were sharp (over-all band widths varied from 2.5 to 3.75 mc. on channels tested). Interlace, poor. Brightness, ample for daytime viewing. Approximate sensitivity varied over a range of from 10 to 60 microvolts on both low and high bands, very good. Acoustical quality on listening test, average for table-model receiver. Over-all electrical fidelity, down 6 db. at 65 and 3000 c.p.s., considered very poor by comparison with other receivers. Tonal range as estimated from output of 6-in. speaker, 120 to 3000 c.p.s., below average and comparable only to an average table-model radio receiver. Sound power output, 1.6 watts at 10% distortion at 400 cycles, fair. Leakage current, 0.2 ma., satisfactorily low. *While the sensitivity of this receiver was relatively very good, the *Hallicrafter 1057U* is not recommended for fringe area reception, because of the undesirably low signal-to-noise ratio. The "three-stage" reception control did change contrast and signal-to-noise ratio as claimed, but only on strong stations. Tests were not made on the UHF section of this receiver but continuous tuning was used to cover entire UHF band. **3**

¹Based upon 3 hours' daily operation.

Twin-Lens Reflex Cameras

If on reading the following article you decide you should buy a twin-lens reflex camera, it will be important to know that the Rolleicord with the Schneider Xenar lens is well worth the extra \$10 over the same camera with Zeiss Triotar lens. (Three-element, or "simple triplet" lenses are popular with manufacturers of cameras; they are on the whole an inferior type, cheaper to produce, and poor to mediocre in performance, compared with cemented anastigmat lenses like the f/4.5 or slower Tessar, Skopar, Xenar, and Dagor.)

If you prefer the Rolleiflex models, the f/3.5 lenses are much superior to the faster f/2.8 lenses, and the camera is \$80 cheaper with the good f/3.5 lens. The fast lens is a hot selling point for the dealer, but is much poorer in performance.

TWIN-LENS REFLEX cameras have in recent years become the kind favored above all others by amateur photographers and by many professionals. This popularity is probably well justified and arises in part because the cameras are simple to operate and render automatic a number of operations which are troublesome to operators or may cause delay when speed of action is important. Another advantage of the twin-lens cameras is that they permit the picture to be viewed and focused full size, as it will appear in the finished print, features particularly useful in getting the sharpest possible focus when near-by subjects are being photographed. Range-finders and focusing scales as used on many cameras are either inaccurate or are awkward and slow to use; thus there has been a natural evolution toward the type of camera which combines the finding action, which places the view correctly in relation to the frame of the picture, with the range-finding or distance determination.

Easily the leading camera in the twin-lens reflex field is the *Rolleiflex Automatic*, which has found wide use among professional photographers who photograph for popular magazines and

which is perhaps the nearest approximation to a generally useful camera that can meet the needs of an inexpert amateur and assure good picture results. The *Rolleicord* is similar to *Rolleiflex* but lacks a few of the refinements present in the latter. There are two objections to the *Rolleiflex-Rolleicord-Kodak-Reflex-Ikoflex* type of camera: they are large for the size of the picture that is taken and the picture shape is square instead of a rectangle with unequal sides, a format which would be more desirable. The square picture arrangement has come about because the user of the twin-lens reflex is more or less limited to pictures with the camera held vertically. Since enlargements are commonly made in 8 x 10 inch or 11 x 14 inch sizes, which are rectangles with unequal vertical and hori-



Rolleicord

zontal dimensions, the effective size of the negative produced by the popular twin-lens reflex camera is thus reduced to about $1\frac{3}{4} \times 2\frac{1}{4}$ inches.

It is important to note that, because of the marked non-uniformity of quality among cameras that are nominally identical, a rating of *A. Recommended* is to be interpreted as meaning that a purchaser can obtain a good camera of a specified model if he recognizes the problem and takes proper precautions to check his purchase before making his selection final. He should certainly make his purchase from a dealer who will give him a 10-day period within which he may receive a full refund, in which to test out the camera and make up his mind whether it performs satisfactorily.

The film-moving mechanisms in the *Rolleicord* and *Rolleiflex* cameras are practical and effective and are more convenient and quick in use than in many others of the popular $2\frac{1}{4} \times 2\frac{1}{4}$ inch cameras.

Twin-Lens Reflex

A. Recommended

Rolleiflex and *Rolleicord* cameras are definitely "top-drawer" in finish, convenience in use, and quality of workmanship. Both have exceptionally high values in the second-hand market and on turn-in. The specialized accessories are greatly overpriced (as they are for Leica and Contax cameras); for example, a lens hood (sunshade) is priced at \$5.12; a light filter, \$5.12; a 35 mm. adapter, \$35.78; a plate back set (back and three plate holders), \$38.27. It should be said, however, that the accessories will not ordinarily be needed, as both *Rolleiflex* and *Rolleicord* cameras are versatile and effective, and dependable, for all ordinary needs of most photographic amateurs, as they come from the dealer's stock, without extras.

Rolleicord, Model III (Distributed by Burleigh Brooks Co., 10 W. 46 St., New York 36) \$149.50 including tax; at this price a *Schneider Xenar* coated $f/3.5$ taking lens and an $f/3.2$ viewing lens of 75 mm. focal length is supplied, together with a leather case for the camera. Made in Germany. Uses No. 120 film to make 12 pictures $2\frac{1}{4}$ in. square. *Compur Rapid* shutter with rated speeds of $1/500$ second to 1 second and bulb. Built-in synchronization for type M flash-bulbs at $1/25$ second or electronic flash at speeds up to $1/500$ second. Reflex viewing and focusing on ground glass; built-in magnifier; the camera also has a finder which can be used at eye level, a feature which is advantageous occasionally for certain pictures, but in this position the user does not have access to the focusing screen. Corrected for parallax. Film is inserted in camera and advanced with back of camera open until arrows on film backing-paper line up with dots in camera; back is then closed and film advanced by turning knob until it will go no farther. The film is then in position for the first exposure, and the number 1 appears on a

small indicating window; each subsequent exposure is set by pressing a button in the film-winding knob and advancing film to a stop. After the twelfth exposure, the film-winding knob may be turned freely. Winding of the film does not set the shutter, and there is no device to prevent double exposures. Quality of lens, good; resolved 28 lines per mm. at $f/3.5$; better than 28 lines per mm. at $f/5.6$. This camera is essentially the same as the *Rolleiflex Automatic*, but lacks some of its refinements (see next listing). Also available at \$139 with $f/3.5$ *Zeiss Triotar* lens. The *Triotar* is a 3-element lens, of a type inferior to the *Schneider Xenar*, a good 4-element lens. (With the *Triotar*, the rating would be *B. Intermediate*.)

Rolleiflex Automatic (Distributed by Burleigh Brooks Co.) \$265, including case and tax, with coated $f/3.5$ *Schneider Xenar* lens; \$285, including case and tax, with coated $f/3.5$ *Zeiss Tessar* lens of 75 mm. focal length; both have $f/2.8$ viewing lenses. Made in Germany. Uses No. 120 film to make 12 pictures $2\frac{1}{4}$ in. square. *Synchro-Compur* shutter with rated speeds of $1/500$ second to 1 second and bulb. Built-in full synchronization and delayed-action timer. Reflex viewing and focusing on ground glass; built-in magnifier. For eye-level focusing, a built-in mirror in hood is set at a 45° angle. This is viewed through a magnifying glass. Focusing is by means of knob which moves the front of camera, which carries the two lenses. Corrected for parallax. The focusing scale is on the periphery of the focusing knob. Film is advanced by turning a crank until it comes to a stop; this automatically positions first exposure and cocks the shutter. For subsequent exposures, one turn of the crank advances the film to next position, cocks the shutter, and actuates a small counter to show the number of exposures made. The film-advance arrangement is one that safeguards against the accidental making of double exposures. Quality of both *Zeiss Tessar* and *Schneider Xenar* lenses, good; both resolved 28 lines per mm. at $f/3.5$; 40 lines per mm. at $f/5.6$. (To be rated excellent, a 75 mm. lens would be expected to resolve 33 lines per mm. at full aperture.) Construction and workmanship of the camera were judged excellent. A listing of this camera with faster ($f/2.8$) taking lens appears under *B. Intermediate*.

B. Intermediate

Ikontex I-a (Made in Germany and marketed by Carl Zeiss, Inc., 485 Fifth Ave., N.Y.C.) \$152, including tax. At this price the camera is equipped with a *Zeiss Tessar* coated $f/3.5$ taking lens and an $f/3.5$ viewing lens of 75 mm. focal length; a leather case is included. Uses No. 120 film to make 12 pictures $2\frac{1}{4}$ in. square. *Prontor S.V.* shutter with rated speeds of $1/300$ to 1 second and bulb, and full built-in synchronization and delayed action. Reflex viewing and focusing on ground glass with *Fresnel* grating or "field lens" to increase brightness of image, and built-in magnifier. There is also an eye-level viewfinder, but in using this the focusing screen is not in

view. There is no parallax correcting device, but the problem is met in part by reduction of the size of the viewing screen to 1-15/16 in. square (not a desirable method). To load film it is necessary to put the automatic film-locking mechanism out of action, which may be a fairly complicated procedure. The film is then inserted and the film-advance knob turned until number 1 appears in the red window. The counting device must then be reset to number 1; this brings the film-advance mechanism back into action and each subsequent exposure is then set by turning the film winding knob and advancing the film to a stop, without reference to the window or numbers marked on the film. A small red signal indicates when the film has been advanced for the next exposure. Winding the film does not set the shutter, but the shutter cannot be operated until the film is advanced; this prevents double exposures. Quality of lens, fairly good; at $f/3.5$ it resolved 28 lines per mm. at the center, but definition at the edges was considerably poorer. Ever-ready case of very unsatisfactory design. Carrying strap, of low-grade leather, and the method of attachment to the camera was poor. This camera was judged somewhat inferior to *Rolleicord* at \$149.50 and less desirable than *Rolleiflex* (\$265-285) cameras listed under A. Recommended in lens quality; it was particularly at a disadvantage in ease of loading film. *Iko-flex* is also available at \$125 with *Novar* $f/3.5$ taking lens, a 3-element lens of a type inferior to the 4-element *Schneider Xenar* — on the *Rolleicord*.

Iko-flex IIa (Carl Zeiss, Inc.) \$188 with case. Similar to *Iko-flex I-a* except that it is equipped with a synchronized *Compur Rapid* shutter.

Rolleiflex Automatic (Distributed by Burleigh Brooks Co.) \$345, including case and tax, with $f/2.8$ Carl Zeiss Tessar taking and viewing lenses of 80 mm. focal length. Quality of taking lens at full aperture ranged from poor to fairly good on four samples tested. At $f/5.6$ the lenses resolved 28 to 40 lines per mm. The definition over the picture area was much less uniform than that given by the $f/3.5$ lenses on the *Rolleiflexes* listed above; the $f/2.8$ lenses gave considerably poorer definition at the edges of the pictures than at the center, when used at large apertures.

Imitation Reflex

C. Not Recommended

Argoflex 40 (Argus Cameras Inc., Ann Arbor, Mich.) \$39.95; case, \$4.95; flash gun, \$4.25. $f/4.5$ coated lens of 75 mm. focal length. Takes 12 pictures $2\frac{1}{4} \times 2\frac{1}{4}$ in. on No. 620 film. Shutter had rated speeds of 1/150, 1/100, 1/50, 1/25 second, and bulb. Synchronized for flash. Taking lens focused from $3\frac{1}{2}$ ft. to infinity by rotation of front lens cell. (Viewing lens fixed and served only as a finder.) Quality of lens, poor. Pictures were unsharp both at $f/4.5$ and $f/8$. Not a reflex camera, in proper sense of the term.

Radio, Television, Automobile Manufacturers, Please Note

A TRADE JOURNAL for television and radio technicians prints a letter of a reader complaining that manufacturers have placed sets on the market without being in a position to supply data required for proper servicing, and maintains, very properly, that the manufacturers should postpone introduction of new models until they are in a position to provide adequate service information.

This is an important point, and the same complaint has been made with respect to new automobiles; in some cases, thousands of cars of a given make and model have been out and on the road for a considerable time before the dealers have been given data on the proper

carrying out of repairs and adjustments. This oversped merchandising of products necessarily involves serious disadvantages and risks (and extra costs) to the consumer who has bought the product which was sent prematurely into merchandising channels.

The consumer who has a desirable degree of caution with regard to the purchase of anything which is distinctly new will probably be wise to make sure that he does not decide upon his purchase until he has firm assurances that the product can be properly serviced, and that the data, diagrams, instructions, etc., which will make such servicing possible are in the dealers' hands.

Storage Batteries

A RECENT REPORT from the American Automobile Association indicates that tires and storage batteries are the two most frequent causes of breakdown of cars. Since motorists nearly always have a spare tire with them, a flat tire is not nearly so serious a problem as a dead battery. Moreover, the battery will often go dead under circumstances where its failure is likely to be serious or even involve a hazard to life as, for example, when it is necessary to restart a car at very low temperatures when battery power is at its lowest, and the load imposed by the engine on the starting motor at its highest.

Most drivers do not give as close attention to their battery as they should. Those to whom the cost of a new battery is important can do a good deal to delay the time when a new battery will be required. Proper maintenance is not a time-consuming job, but it must be done with reliability and regularity. Much can be done by watching the ammeter needle on the dash, particularly after periods when there has been a good deal of driving at night or considerable use has been made of accessories on the car, such as the radio. Short runs with frequent starts or stops are likely to cause the battery charge to decline; in such use of a car, particularly in winter, the charging rate as shown by the ammeter should be watched regularly, in order to avoid overworking the battery. If the charge indicator does show that the battery is in a low state of charge, as may happen, for example, if the ignition is left on by mistake overnight, a recharge of the battery by a service station or by use of one of the popular home charging units is indicated. Many drivers give little attention to the battery ammeter and do not understand the meaning of its indications; but the man of the house can explain to other members of the family that a low charging rate tends to indicate that the battery is in good condition; that a high charging rate may mean that it is in a state of partial discharge and likely to fail if subjected to unusually severe use as, for example, in starting on a very cold day. (A charging rate of zero

Money-Saving Hints on Battery Use and Care

1. Make sure water level is maintained, but don't overfill.
2. Make sure hold-down clamps and battery cable connectors are tightened properly — a jiggling battery will likely be short-lived; excessive tightening can warp or crack the case.
3. Keep battery cable connectors and connecting posts on battery clean — a light coating of vaseline or grease may be of help in this.
4. When starting a car in cold weather, depress the starter only 10 to 20 seconds, then wait an equal interval before trying again; making a battery work for too long a period at one time will run it down quickly.
5. When buying a new battery, accept only one which shows specific gravity readings of 1.250 or higher on each of the three cells. Battery dealers often do not properly maintain their batteries, and thus sell a good many in a deteriorated condition because of their not having been kept fully charged.

is a cause for suspicion that the charging regulator or the generator is out of order, and if that should be true the battery charge will fall off very rapidly.)

If the battery is being continuously overcharged as by an incorrect setting of the charging rate from the generator, there will be an unduly large loss of water from the cells, requiring frequent replenishment (particularly in hot weather when there is a good deal of driving at good speeds and the headlights are not much used because of the long hours of daylight). Overcharging or long-continued charging can harm a battery, but overcharging is not likely to be as harmful to a battery as undercharging.

The worst situation of all for battery life is to allow it to stand in a condition in which the

charge is low. A battery which is to be unused for several weeks should go into that period with a full charge and be given at least a brief recharge every two or three weeks. The adding of needed water during cold weather should be done before a period of driving so as to provide for mixing the water with the electrolyte in the battery; otherwise, if the weather is very cold, there may be freezing of the water at the top of the battery. When refilling a battery, do not fill above the level recommended by the battery manufacturer — usually shown by some sort of indicator in the filling opening. Overfilling tends to cause marked corrosion of battery terminals and near-by parts. It would be helpful if battery manufacturers who use liquid level indicators would include with each battery instructions that tell how the device should be interpreted, together with advice concerning the battery's use, and the reason why the liquid level should not be allowed to get low.

The degree of charge of the battery can be checked with a hydrometer, available at most service stations, but most people would find it worth while to have a hydrometer of their own in their garage. Readings in the range of 1.270 to 1.280 at normal summer temperature are usually indicative of a fully-charged battery; readings lower than 1.225 are indicative of undercharging, and they may show that the battery is dead or nearly dead. If such a battery when being put on charge does not come up to a figure of 1.250 to 1.270 on all cells, it may be regarded

as in a seriously deteriorated condition. (Normal gravity at a temperature of 32°F will be about 1.270 to 1.290.)

Anyone who may be inclined to purchase and use a chemical substance or mixture (technically known as a battery additive) asserted to improve the performance or extend the life of a storage battery, would be wise to ascertain first whether use of a proprietary chemical in the battery may not render void the adjustment policy or guarantee set up by the manufacturer of the battery or the mail-order house which distributed it.

CR's test procedures are chosen so as to give useful information regarding three important qualities of a battery. They are similar to standards as set forth in Federal Specification W-B-131d and by the Society of Automotive Engineers. One test is to determine the time in hours and minutes during which the battery can supply continuously 5 amperes of current while maintaining a terminal voltage of at least 5.25 volts (two separate runs are made). A battery rated at 100 ampere-hours by its manufacturer should produce at least 100 ampere-hours in this test. If one compares two batteries, one of which supplied 108 ampere-hours and another 92 ampere-hours, the indications are that the first battery will have the greater amount of active material, and it will probably hold up longer in normal use of the car than the second.

CR also includes another similar test of 3 cycles, not included in either of the standards

Name	5 Ampere Discharge Rate, Ampere-Hours		12.5 Ampere Discharge Rate, Ampere-Hours		300 Ampere Discharge, 0°F, Minutes	
	Sample		Sample		Sample	
	No. 1	No. 2	No. 1	No. 2	No. 1	No. 2
<i>All State Cross Country, No. 46</i>	84.0	85.0	75.5	78	1.3	1.1
<i>Atlas A-1</i>	97.5	103.0	94.0	96.5	4.1	1.6
<i>Auto-Lite PN-15</i>	111.0	108.5	103.5	101.5	2.6	2.2
<i>Cadet, No. 1 Deluxe</i>	106.0	103.5	101.0	97.5	4.0	3.3
<i>Delco Remy 15AA</i>	113.0	116.5	105.5	108.5	3.2	2.0
<i>Exide Sure-Start</i>	108.5	107.5	99	95.5	3.9	3.8
<i>Firestone LD 151</i>	108.0	109.5	97.5	101.5	4.0	2.2
<i>Ford 81A-10655-A</i>	101.0	103.0	95.5	95.0	3.1	2.6
<i>Goodyear A-115</i>	92.0	91.0	84.5	84.5	3.6	2.5
<i>Willard HDW-1-100</i>	109.5	1	100	1	3.1	1
<i>Willard HW-1-100³</i>	101.0	104.5	92	98	3.0	3.6
<i>Winter King, Standard S-1</i>	98.0	101.0	89.0	91.5	4.2	3.5

¹One sample tested.

³Three samples tested; figures for the other Willard HW-1-100 battery were 101.5, 92.0, 3.2.

mentioned; in this, the time is measured during which the battery will supply continuously 12.5 amperes of current while maintaining a terminal voltage above 5.25 volts. This test is included because it is CR's opinion that the 12.5 ampere discharge is more representative of the demand made on the battery in a modern automobile with its many electrically-operated accessories than the 5-ampere test which has been widely used over a period of many years. A third test gives an indication of the ability of the battery to start a car on a cold winter day. This we deem the most important of the three tests. With it, time in minutes is measured during which the battery, while cooled to 0°F, will deliver 300 amperes of current before the voltage at the terminals drops to 3 volts. A battery rated at 100 ampere-hours should be capable of supplying this high starting current for a period of at least 3.3 minutes. If it is unable to do this, early difficulties with cold-weather starting may be expected (this is very likely to be the factor which determines the end of an automobile battery's useful life).

All batteries included in the test were rated at 100 ampere-hours by their respective manufacturers and had terminals which were properly marked. The best marking of terminals was on the *Firestone LD 151* and *Goodyear A-115*, where the terminals were marked + and - and the abbreviations POS and NEG appeared on the case, too. Unless otherwise noted, the batteries tested were up to Specification requirements, or exceeded them.

A. Recommended

Exide Sure-Start (Electric Storage Battery Co., 1950 Allegheny Ave., Philadelphia 32) \$22.05. 18-month guarantee.

B. Intermediate

Atlas A-1 (Esso Standard Oil Co.) \$20.89. 21-month guarantee. One sample of two tested showed an unusually low starting capacity under winter condi-

tions (only about half the required number of minutes for 300 amperes current at 0°F). On this test, the performance of the other sample was very good.

Cadet, No. 1 Deluxe (Distributed by The Pep Boys, chain auto supply dealers) \$18.95. 36-month guarantee.

Firestone LD 151 (The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17) \$22.75. 18-month guarantee. One sample had low winter-starting capacity.

Willard HDW-1-100 (Willard Storage Battery Co., 246 E. 131 St., Cleveland) \$21.95. 18-month guarantee. Sample had low winter-starting capacity.

Willard HW-1-100 (Willard Storage Battery Co.) \$20.95. 18-month guarantee. Two of three samples, had poor starting capacity under winter conditions.

Wards Winter King, Standard S-1 (Montgomery Ward's Cat. No. 61-6310F; purchased at retail store) \$14.45. 24-month guarantee.

C. Not Recommended

Allstate Cross Country, No. 46 (Sears-Roebuck's Cat. No. 28-46; purchased at retail store) \$15.45. 24-month guarantee. Below federal and S.A.E. specification requirements in all tests. Both samples were very far below standard on winter-starting tests.

Auto-Lite PN-15 (Electric Auto-lite Co., Toledo 1) \$21.25. 18-month guarantee. Both samples had poor winter-starting capacity; in other respects these batteries showed good discharge capacities, and would probably give satisfactory service in a mild climate.

Delco Remy 15AA (Delco-Remy Div., General Motors Corp., Anderson, Ind.) \$19.95. 18-month guarantee. Both samples had poor winter-starting capacity; battery otherwise had excellent capacity (see comment on *Auto-Lite PN-15*).

Ford 81A-10655-A (Ford Motor Co., Detroit) \$24.35. 18-month guarantee. Both samples had poor winter-starting capacity.

Goodyear A-115 (Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16) \$21.95. 18-month guarantee. Below Specification requirements for 5-ampere discharge rate. One sample had poor starting capacity under winter conditions.

Corrections and Emendations to Consumers' Research Monthly Bulletins

Slide Projectors
Page 22
Jan. '52 Bulletin
Argus PBB-200. Change rating from *C. Not Recommended* to *B. Intermediate*. Top temperatures attained by the slides in two additional samples of this projector tested by CR were found to be satisfactory.

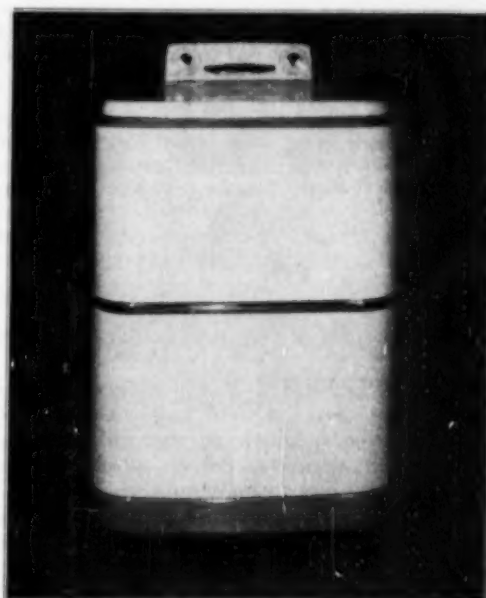
Anti-Freeze
Page 26
Nov. '52 Bulletin
Thermo Type N (Publicker Industries, Inc., Philadelphia). Delete the listing; this denatured alcohol (ethanol) anti-freeze is not being produced at the present time.

CR's Tests of Apex and Universal Automatic Washing Machines

THE *Apex Wash-A-Matic Model 6000* and the *Universal Model AWS-30* automatic washing machines are similar in a number of ways. Both received a *B* rating, and were about the same in performance in most respects. The washing action of both machines is provided by a wobbling motion of a basket made of *Fiberglas*. The control panels are of different appearance, but they are operated in the same manner (the *Apex* has a "slide-rule" or straight-line dial; the *Universal* has a round dial on the control knob). The controls allow a choice of water for washing, either hot (at the temperature of the hot-water supply) or warm (regulated by the machine to about 100°F). The clothes are rinsed in warm water, regardless of the setting used for washing. Pulling out the control knob stops the washer at any time, and the dial may then be reset to start the machine at an-



Apex Wash-A-Matic



Universal Model AWS-30

other part of the cycle, if desired. There is no control setting on either machine to decrease the amount of water used when small loads are washed. Such a control is desirable where hot water is scarce or expensive. Filling of tub with water is controlled by a timer (which is not considered as desirable as a pressure- or float-actuated control for homes in which water pressure is low or variable, e.g., in rural or suburban homes having a private water supply system). The washing machines employ an easily-serviced belt drive instead of a geared transmission.

Both the *Apex 6000* and the *Universal AWS-30* successfully passed the electrical safety tests (proof-voltage and leakage-current tests). A special cold-water hose supplied with each machine provided a ground to the cold-water outlet, which is a satisfactory arrangement. CR believes that a separate properly installed, No. 14 or larger copper wire ground is the best safeguard, but this type of ground is often improperly or carelessly installed, or even omitted; on that

account the special connection provided in the cold-water hose with metallic insert is a desirable and convenient means of providing a ground.

B. Intermediate

Apex Wash-A-Matic, Model 6000 (The Apex Electrical Mfg. Co., Cleveland 10) \$300.

Dimensions and description:

41 in. high, 27 $\frac{1}{4}$ in. wide, 28 $\frac{1}{2}$ in. deep. Maker's capacity rating, 8 lb. Loading door on top. Machine does not require bolting to floor. The complete cycle provides a washing time of 13 minutes, a spray-spin rinse, two agitated rinses, a damp-dry spin, and a final agitation to loosen the mass of clothes, for a total time of 27 $\frac{1}{2}$ minutes. Requires no oiling.

Performance in test:

Effectiveness in washing, fair (somewhat uneven). Effectiveness in extracting water from clothes, good (water left in 8-lb. load of clothes was 65% of dry weight of clothes). Water consumption for complete cycle, with 8-lb. load, at about 40 lb. per sq. in. water pressure, 13 $\frac{1}{2}$ gal. of hot water, 13 $\frac{1}{2}$ gal. of cold water. Current draw, 8 amp. at beginning of spin

(favorable). Energy consumption for complete cycle, 205 watt-hours. 3

Universal, Model AWS-30, Style WMI-2 (Universal Major Electric Appliance Co., Lima, Ohio) \$300.

Dimensions and description:

41 in. high, 26 $\frac{1}{4}$ in. wide, 27 $\frac{1}{4}$ in. deep. Maker's capacity rating, 9 lb. Loading door on top. Machine does not require bolting to floor. The complete cycle provides a washing time of 12 minutes, two spray-spin rinses, two agitated rinses, a damp-dry spin, and a final agitation to loosen the clothes, for a total time of 27 $\frac{1}{2}$ minutes. Requires no oiling.

Performance in test:

Effectiveness in washing, fair (somewhat uneven). Effectiveness in extracting water from clothes, good; water left in 9-lb. load of clothes was 70% of dry weight of clothes. Water consumption for complete cycle, with 9-lb. load, at about 40 lb. per sq. in. water pressure, 11-1/3 gal. of hot water, 19 gal. of cold water. Current draw, 9 amp. at beginning of spin (favorable). Energy consumption for complete cycle, 210 watt-hours. 3

Use of CR Material for Any Advertising Purpose Is Not Permitted

THE STATEMENT, which appears on the inside cover page of each issue of CR's BULLETIN in boldface type, that use of CR material is not permitted for any advertising purpose, clearly and unequivocally expresses Consumers' Research policy, which has been in effect since CR was founded. A fuller statement of this policy appeared in an early publication of Consumers' Research in the following words: "CR does not, under any circumstances, grant permission for use of its name or reference to its findings in advertising or sales representations. No use may be made of CR's name or findings in any commercial connection."

Readers who have followed CR's BULLETINS for a period of years, however, will know without being told that CR has no support of any kind from manufacturers or dealers, that it receives no contributions of money or items of value from any source connected with industry or business, radio, television, or other advertising; neither does it receive any subsidy from governmental agencies. Its service is strictly for ultimate consumers, and it is operated in their interests exclusively.

Occasionally a manufacturer has used the name of Consumers' Research without permission, in newspaper, radio, or television advertising. When such a violation is brought to CR's attention, the offending company is notified that such use of our material is improper and not permitted. (A given claim or assertion is usually made only once or twice on television

or radio; then, when the advertiser's purpose has been served, he drops the reference or claim and goes on to something else.) Some subscribers may ask what is CR's reason for not permitting the use of its findings for advertising purposes. The answer is simple. In principle, there might be no serious objection if the reports were used in their entirety and without being "slanted" in some way by a sales talk or accompanying advertising copy. Unfortunately, in practice, advertising men almost invariably yield to the temptation either to take material out of context or to present it with some degree of selection or false emphasis so that either the actual statements or the effect is misleading. Their aim is to show, for example, not that their product is one of several good ones, but that their product is superior to all others, when in fact that is very likely not true at all. Experience with advertising men's angling of CR's statements about products has occurred over so many years and with such uniformity that CR has long since come to the conclusion that its findings should not be used for any advertising, sales promotion, publicity, or selling purposes, and a prohibition to this effect is, as has been noted, included in each monthly BULLETIN.

CR is organized and operated solely to serve consumers. It has no service for manufacturers, dealers, or for business concerns in general, and does not wish at any time to be identified with commercial organizations or their claims for their products.

Electric Clocks

THE MODERN electric clock is a far cry from the slow-ticking, weight-powered clock used in grandfather's day. Grandfather expected, and usually got, a timepiece that would last a lifetime with a reasonable amount of care. The movement was made with strong, substantial parts that could easily be taken apart and reassembled for cleaning or repair. And every week grandfather got some exercise (which some of today's fathers and grandfathers would be better off for), and had to do 50 foot-pounds of work, more or less, to wind up the weights to keep his clock running.

The electric clock requires no manual effort to "wind it up," but as was pointed out by Richard M. Sutton of the Haverford College Physics Department, writing in *The Science Counselor* (March 1948), it consumes a startling amount of energy compared with the muscular effort required in the weekly clock-winding that was a familiar chore in the old-fashioned home. The modern clock uses (as electrical energy) about 20,000 times as many foot-pounds as did the old-fashioned weight-driven clock. It obtains its million or so foot-pounds of energy per week from the power company at a cost of about 1½ cents. When supplied with uninterrupted, controlled-frequency current, the electric clock keeps almost perfect time — as the spring- and weight-driven clocks did not — until wear or dirt make servicing necessary. Because electric clocks of reasonably good quality are now available at low prices, and cost little for current, it is not uncommon to see three or four, or even more, electric clocks in a single home.

It is difficult to predict accurately the life of an electric clock. Some very low-priced clocks have been known to run for 20 years with an oiling from time to time when the movement became noisy. Others have had a comparatively short life. It can be stated, however, that the following points have a direct bearing upon the life expectancy of an electric clock: material, size of movement, accuracy of fit, finish, and provisions for lubrication of the moving parts; type of material used for case and for dial; and other general design features such as the means used to prevent dust and dirt from getting into



Top row: Seth Thomas, Sentinel, Gilbert.

Center: Sessions.

Bottom row: Westclox, Telechron, General Electric.

the movement. Many clocks have a motor unit which can be easily removed and replaced. This, of course, is a good feature, as the parts of the motor turn faster than the other parts of the movement and usually are the first to cause trouble as wear occurs. However, the lowest-priced clocks, the ones that sell at \$3 or \$4, are often not worth repairing. Modern industry is well set up for low-cost mass manufacture, but the service trades have not by any means kept up with it; thus it often happens that even a small repair on a mass-produced article costs more than to get a new one that was made in a factory and so was subject to all conceivable production-line economies in assembling, adjusting, testing, and packaging.

There are a few features that we feel should be on all electric clocks, some of which at present are not on any of them, so far as we know: (1) A telltale stoppage indicator that can be seen easily. (2) Minute marks so that time can be accurately set, and preferably a *round* dial, unless the purpose of the clock is primarily for ornament. (3) Mechanism which is as nearly as possible dustproof. (4) A silent motor, which preferably should not be self-starting; there is no objection to a self-starting motor if the clock has a good

and conspicuous telltale. Any clock seems silent in a store or other busy place, but even a faint noise can be disturbing in a sleeping room for a person used to a nearly sound-free environment during sleeping hours. (5) Well-proportioned hands visible from a good distance. (6) Stability, so that the clock will not be easily knocked over. (7) A protected dial glass that will not be broken if the clock is upset, or one made of a kind of plastic that does not deteriorate or become brittle with time. (8) A time-setting mechanism that can be set as simply and quickly as that on an old-fashioned spring-driven clock. (Some require too many turns, or turn too stiffly.) (9) Soft padded feet to prevent marring of furniture, and cut down noise transmission to furniture or other objects that radiate sound. (10) A sweep second hand that will indicate whether the clock is running. (11) Dials should be metal (paper dials discolor and are hard to clean; they may even be attacked by silverfish).

Some have suggested the desirability of a maintaining spring which used to be available in the earlier electric clocks, but probably in most districts nowadays the power interruption problem is not of sufficient importance to warrant the expense that would be involved in adding such an extra mechanism to electric clocks.

The following additional features should be present on an electric alarm clock: (1) 24-hour self-setting alarm with cut-out, easily reached from the front of the clock. This device should indicate whether the alarm is on or off. One make has a lamp which glows red to indicate that the alarm is set. (2) An alarm which permits desirable variation of loudness. (3) An alarm dial which is easily read and set. (4) A dial which can be read in the dark; for example, using a 1/25-watt neon light (with on-off switch in a convenient position).

CR's Tests

There were various types of cases on the electric clocks included in this test. The style of the cases is a matter of no importance except as appearance may be pleasing or otherwise; the movements are considered to be typical of the brands tested, since the difference between clocks of a given make at different prices is not, as a rule, in working parts, but in the design and finish of the case.

All the clocks successfully passed the proof-voltage and leakage-current tests. All would start on a line voltage as low as 80 volts, and after starting they continued to run even when the voltage went as low as 20. The power consumption ranged from 2 to 3 watts (correspond-

ing at an average rate for electrical energy to about 60 cents to 90 cents per year operating cost).

The ratings are based chiefly upon engineering examinations of the movements. General design, materials used for the wearing parts, dust protection, noise, and provision for low-cost servicing were the factors considered to be most important.

Clocks which do not have a stoppage indicator or telltale are not recommended for use where power failures are likely to occur. (In some localities, power interruptions are fairly common; in other places they almost never occur.)

A. Recommended

General Electric Designer, Model 3H182 (General Electric Co., Ashland, Mass.) \$9.95, plus tax. Mantel clock with wood case, and telltale. Nearly rectangular metal dial with embossed numerals, and no minute marks. High speed, sealed motor unit, easily removed for replacement. Gear train, considered fairly good; dust protection, good.

Sentinel, Model SH-164 (The E. Ingraham Co., Bristol, Conn.) \$15, plus tax. Large wall clock with wood case, and no telltale. Square dial of paper (relatively undesirable). Minute marks (desirable). Motor (enclosed type) is slow speed, which is advantageous, other things being equal, from the standpoint of noise and long life. Gear train and dust protection, considered good.

Sessions, Model 2W (The Sessions Clock Co., Forestville, Conn.) \$11.95, plus tax. Mantel clock with wood case, and no telltale. Round metal dial with embossed numerals, and minute marks. Motor is slow speed, open type, easily removed for servicing or replacement. Gear train and dust protection, considered good. Difficult to set time because of the high spring tension on the time-setting arbor.

Seth Thomas Accent, Model E865-000 (Seth Thomas Clocks Div., General Time Corp., Thomaston, Conn.) \$14.50, plus tax. Alarm clock with metal case, and metal bell alarm and telltale. Round metal dial. Minute marks. Motor is slow speed, open type, easily removed for servicing or replacement. Gear train, considered good; dust protection, fair.

B. Intermediate

Telechron Little Tel, Model 7H137 (Telechron Dept., General Electric Co., Ashland, Mass.) \$4.95, plus tax. Alarm clock with plastic case, and buzzer alarm and no telltale. Square, painted metal dial, with no minute marks. High speed, sealed motor unit, easily removed for replacement. Gear train and dust protection, considered fair. Difficult to set time because of high spring tension, small knob, and excessive number of turns required.

Westclox Barry (Westclox Div., General Time Corp., La Salle, Ill.) \$4.95, plus tax. Alarm clock with plastic case, and bell alarm and telltale. Round dial, paper (relatively undesirable). Minute marks

(desirable). Motor is slow speed, open type, removable only by taking movement apart. Gear train, considered good, but noise was objectionable for a clock in the bedroom; dust protection, fair.

C. Not Recommended

Gilbert, Model 103-W (Wm. L. Gilbert Clock Corp., Winsted, Conn., and Laconia, N.H.) \$3.49, plus tax. Kitchen clock with round plastic case, and no telltale. Numerals molded in case, round paper dial with minute marks. Second hand is double ended,

and hence undesirable; its sole purpose would seem to be to indicate that the clock is running (could not be used for timing eggs, for example). High speed, sealed motor unit, easily removed. Dust protection, fairly good. Gear train, considered fair. (Motor unit has a small shaft with a very small brass pinion engaging a brass gear. A better practice would be a steel pinion running with a brass gear.) This clock, in spite of its lack of a telltale, and even though it is believed that it would give a shorter useful life than other clocks tested, might be a good buy for some uses, because of its low price.

Off the Editor's Chest

(Continued from page 2)

in CR BULLETIN, December 1952, p. 32) especially designed to be used in sling pumps. The product had been sold by a Woolworth store in a small city in Pennsylvania. After subjecting two samples to use tests, we came to the conclusion that the item was worth looking into and tried to get it at several Woolworth stores but were unable to locate it. Letters to the company at the address given on the card accompanying the shoe trees remained unanswered, and we came to the conclusion that possibly the Korean War had forced the manufacturer to suspend operations due to inability to get metal. Not long ago the product was discovered in the notion department of a well-known New York store where the buyer advised the inquirer that it was current stock and generally available. Again we wrote the company and received no answer, but finally after locating the number in the New York telephone directory and telephoning twice were able to secure the information from one of the company's executives that, while the product was widely distributed through large wholesalers, the company itself could give no information whatever on the names of stores where the product might be purchased by ultimate consumers.

No doubt most manufacturers are so accustomed to thinking of selling their product in large units that their office staff is simply not set up or interested to handle inquiries from individual consumers. There are several fields, however, notably motion pictures and books, in which word-of-mouth advertising is considered important and very helpful in promoting the popularity of some book, play, magazine, or motion picture. Who knows what the same

force of public opinion might do for other products if it were skillfully used? The woman, for example, referred to by the advertising columnist already mentioned wanted to buy *Fresh* soap but she was unable to locate it and could not write the manufacturer of *Fresh* deodorant because the only address on the jar was the name of a city. Had she been able to obtain a bar by writing the manufacturer, no doubt many sales might have been stimulated in her community by her favorable comment if she was pleased with the product and the company's handling of her request.

There is, of course, some attempt to deal with this situation by getting the manufacturers and distributors of branded products to advertise in classified telephone directories. CR, however, has had very little success in locating particular brands by this method. In purchasing children's shoes some years ago, a half-dozen futile trips were made to the addresses listed in the classified directory of distributors of particular makes. In one or two cases the salesgirl contacted said, "Oh, no, we don't carry that brand any more. We carry the Blank brand which is much better." If manufacturers and distributors are unable or unwilling to handle consumers' inquiries themselves, perhaps they could arrange with the local Better Business Bureaus, Chambers of Commerce, or Boards of Trade to keep up-to-date lists of stores where particular brands are sold. The matter is certainly worth the attention of all those manufacturers who realize that customers are, after all, individuals and that treating them as such will, in due time, achieve greater prosperity and standing for the company itself.

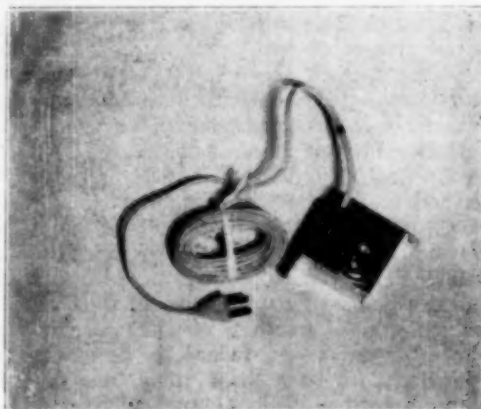
Closet Lights

Not all consumers are interested in Klox-A-Lite and E-Z-Do described in this article, but the principles brought out in the discussion are of importance to everyone. This brief article calls attention to certain unsafe and undesirable methods of wiring. The careless use of lamp cords in locations where permanent wiring is really needed is a matter of serious concern to electrical experts and fire protection officials. Bear in mind that a lamp cord which is safe today may be a hazardous conductor after a few years of exposure to light and air and after abrasion due to use and contact with the floor, woodwork, furniture, or appliances. This brief article also emphasizes the fire hazard which may arise from prolonged contact of clothing, papers, and other easily combustible materials with an electric lamp bulb in a closet, wardrobe, or other confined space.

PROPER LIGHTING in closets is often overlooked, or omitted due to cost, even in modern homes. Possibly the majority of homes have one or more closets in which the lack of a suitable light causes frequent fumbling and groping, or calls for the use of a flashlight, which at best is an unsatisfactory expedient. A number of special lights have appeared on the market which are intended to solve this problem. Two of the lights, the *Klox-A-Lite* and the *E-Z-Do*, were examined by CR. The lights consist of a small aluminum box enclosing a lamp socket and a push-button switch; a length of lamp cord, with a plug, is attached. The lights are fastened in an upper corner of the closet door opening so that opening the door will operate the switch.

The cord is plugged into the nearest outlet and, according to the directions, is to be fastened at convenient points with the staples or wire holders supplied with the lamp. As the outlet normally will be *outside* the closet, the cord must be run underneath or above the door. The

instructions supplied with each of the lamps stated that plenty of clearance should be given to the cord (cutting a notch in the door was suggested). *CR does not recommend this method of wiring for any electrical appliance.* The Underwriters' Laboratories do not list or approve devices supplied with a cord and plug for such uses, for they correctly hold that lamp cord is not suitable for fixed installations. Staples or small metal clips may cut through the insulation and cause a short circuit. Any use of lamp cord placed above or underneath a door presents a great risk. (A cord passing through the part of a door which touches the jamb is especially dangerous, of course, because of the pinching action at this point.) A wire under a door is subject to abrasion from the door and from cleaning tools (such as a vacuum cleaner nozzle). It is in a position where under some circumstances it could be pinched under the door, especially if a coat hanger or other object were to fall to the floor and be caught in the opening, with the wire. Although a permanent lighting fixture installed by a qualified electrician would cost much more than the closet lights which were examined, it would not create the possibility of an avoidable short circuit and fire hazard;



CR deems it better to do without a closet light than to use one which might create a fire hazard.

There is another matter that must be remembered in connection with any closet; it must be so located that there cannot be any possibility of the lamp's coming into contact with clothing or papers. It is known that electric lamps attain temperatures sufficiently high to set fire to clothing or other flammable articles if they remain in contact for a sufficiently long time, as might happen when a light was left on in a closet through error. There is another element in the problem in that lamps occasionally fail under circumstances in which abnormally high temperatures are reached just before failure

occurs. Under such conditions, even a small lamp might achieve sufficiently high temperatures to ignite combustible items hanging in a closet or on a closet shelf, and close to or touching the lamp.

CR has not been able to locate a satisfactory battery-operated closet light but if it is found that one is being marketed, we shall mention it in a future BULLETIN.

C. Not Recommended

Slater Klos A-Lite Automatic Closet Light (Slater Appliances, Inc., Woodside, N. Y.) \$1.89.

E-Z-Do Magic Closet Lite. \$1.89. (Maker's name and address not shown on light or package.) Substantially the same as *Klos-A-Lite*.

Hot-Water Supply from Tankless Heaters

MANY CONSUMERS, particularly those living in small homes equipped with tankless water heaters, have found that the amount of hot water such heaters provide is at times not sufficient for their needs. The natural tendency is to blame the heater, when the real reason is that the boiler and its oil or gas burner do not supply heat fast enough to operate the tankless heater (at its rated output in gallons per minute), or the fundamental limitations of hot-water heaters have not been properly considered. In some cases a heater that uses a storage tank would have been better than a tankless heater.

To understand the principles involved, it is first necessary to consider how a tankless heater functions. Such a heater consists of a copper coil having a large surface area (usually about 12 sq. ft. for the one-family size), which is either built into the boiler or enclosed in a separate shell containing circulating hot water that is piped from the boiler. This coil has from three to six times the surface area of the more common type of heater that uses a storage tank. The water in the boiler, which should be maintained not far below 180° (if a hot-water system), circulates around this coil and the water to be heated flows through it. It is very important to realize that if the hot water is drawn off faster than the burner can replace the heat taken from the boiler water, the temperature of the water at the faucets will drop considerably. When hot water is drawn for only a short period, it is heated by the heat stored in the boiler; at other times the burner must supply it.

In winter, quite frequently the boiler will be supplying heat to the house at the same time as there is a demand for hot water; thus, if the heater is to be effective, the boiler and burner must be adequate in capacity to take care of both at the same time. In properly installed systems, a reverse-acting aquastat is included which prevents heat being supplied to the house radiators when the temperature of the water in the boiler is below normal; while this increases the supply of hot water available, heating of the house is likely to be unsatisfactory during periods when the demand for hot water is unusually heavy. *In general, it is a sound rule not to install a tankless heater if the oil burner is equipped with a nozzle of smaller size than the 1-1/2 gallons of oil per hour.*

There will be homes where smaller nozzles have been found to work satisfactorily with tankless heaters, but it will usually be found in such cases that the demands for hot water are small, as in homes with one or two adults and no servants or children.

Tankless heaters are very convenient and money-saving appliances. They are deservedly popular and have all but supplanted the older tank types with automatically-fired boilers. They are the preferred choice to produce an economical hot-water supply, and where storage space is at a premium; they are particularly adapted to homes where the householder does not require large amounts of hot water over extended periods of time.

AM-FM Tuners for High-Fidelity Use

THE TUNERS reported on in this article, together with the *Browning* tuners previously tested, are believed to be the ones which constitute the largest percentage of the sales of high-fidelity tuners. There are several new tuners which became available recently or have been announced, such as the *Pilotuner Model AF-821*, the *Stromberg-Carlson Model SR-401*, the *Hallicrafter Model ST-83*, and the *Fisher* (not available at the time of writing this report). Reports of tests on these newer units will be forthcoming when, in CR's opinion, sufficient time has elapsed to allow the different manufacturers time for removal of the "bugs" which are likely to be present in any newly designed and manufactured article of complex character. CR believes that in the meantime its subscribers will usually be well advised to buy those tuners which have been tested and found to be deserving of recommendation, unless they have fairly definite information of a technical nature, or based on tests, that they deem favorable to some other make.

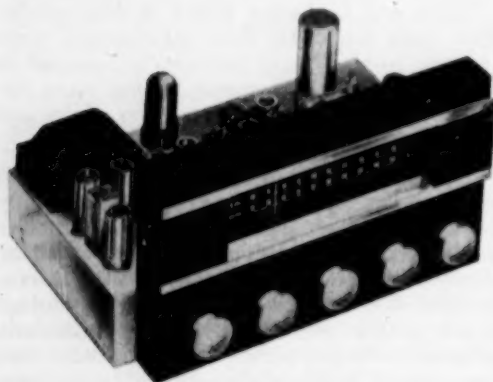
The study reported was made in three parts: the first on the AM sections, the second on the FM sections, and the third on the audio sections of the respective tuners. The facilities of an AM and an FM broadcast radio station were used for several of the check tests, together with

the more usual laboratory and listening tests CR normally employs.

AM Characteristics

The design of an AM tuner for high-fidelity use involves problems quite different from those affecting the design of a tuner for the usual home receiver. Sensitivity and selectivity characteristics are especially involved. Since the noise level in the signal received from a distant station will be relatively high, high-fidelity reception will not normally be available from such stations, or indeed, from any stations where there is "crowding" of the AM broadcast band. Thus the sensitivity of a tuner for high-fidelity use will be kept low intentionally with the effect of reducing the between-station noise, and, of course, of reducing the number of stations received that are located at a considerable distance.

There is a close relationship between selectivity and sensitivity in that wide-frequency response which gives good fidelity in tonal qualities requires a low degree of selectivity; that is, broad tuning — which is unable to discriminate between stations on closely adjacent channels. Unfortunately the AM stations, whose frequencies were assigned before high-fidelity reception became a problem of much interest, are in some localities so closely spaced that unless one is situated close to a broadcasting station whose signal is wanted, interference from other stations close to the first one on the dial may come in to an extent that will make reception intolerable. How many such cases there are with a given receiver and how bad the interferences are depend upon many more or less accidental factors, including receiver location; height and type of antenna; power of the broadcasting stations and their location; time of the year, even the time of the day. Thus the selectivity has to be intelligently chosen so as to make possible reception of as wide an audio range as is compatible with a reasonable amount of adjacent-station interference. Distortion caused by the detector stage is also a factor contributing to the necessity for a relatively narrow frequency



Craftsmen C-10 FM-AM Tuner

response in an AM tuner, since distortion tends to increase as the audio frequency range (fidelity) of the receiver is increased.

It should also be mentioned that a tuned r.f. stage is regarded as essential in superheterodyne receivers if the annoying spurious responses such as squeals or "birdies" often noticed on inexpensive table-model receivers are to be minimized and the tuner is to exhibit what is called satisfactory "image rejection."

FM Characteristics

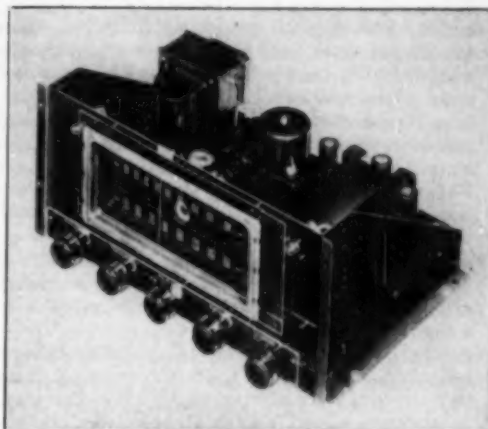
Sensitivity, noise rejection, distortion in output, and stability are the four factors which are of greatest importance when examining an FM tuner.

Any FM tuner should be very sensitive, if reliable reception is expected. This factor is especially important if the tuner uses the desirable *Armstrong* circuit in which a quiet signal, that is one without hiss or noise, is obtained only when the limiting stages are actually "limiting" the noise components of the signal. Wide, undistorted dynamic range in an FM tuner (or receiver), determined by its selectivity curve, is not difficult to attain and seldom presents a problem. Frequency stability, however, is difficult to achieve and is a critical factor, because a very slight amount of "drift" will produce intolerable distortion of tone in the sound output. Many receivers now incorporate an automatic frequency control (a.f.c.) circuit which constantly re-tunes the receiver (by a small amount) and tends to eliminate the problem of drift. While a.f.c. does afford a less exacting means of tuning an FM receiver, it has the disadvantage, oftentimes, of selecting the more powerful of two stations that happen to be closely spaced on the dial. For this reason, when a.f.c. is used, it is desirable to have a switch present which will cut out the a.f.c. circuit when it is desired to receive a weaker station close in frequency to a powerful one.

In CR's opinion, the *Armstrong* circuit is to be preferred slightly to the ratio detector because of its superior noise-rejecting characteristics. The ratio detector, however, can give entirely satisfactory results if properly executed and adjusted. A visual tuning indicator is regarded as a necessity in any good tuner that uses the ratio detector circuit.

Audio Requirements

Most of the better combination AM-FM tuners contain both bass and treble tone controls and provide a switching arrangement so that



Sargent-Raymont SR-51 AM-FM Tuner

AM, FM, or phonograph may be played. This arrangement offers an advantage in that the needed controls are centered at the tuner, and the amplifier can be mounted in an unobtrusive or out-of-the-way position. CR's tests have indicated, however, that, in general, the tone controls on the very best amplifiers are of considerably higher refinement than those on the tuners of more refined design. Thus, when assembling a combination, the owner will, when practicable, prefer to set the controls on the tuner at their "flat" position or use that output plug on the tuner which by-passes the tone controls, and use the controls on the amplifier. In the AM-FM tuners listed, however, tone controls were considered satisfactory.

The *Craftsmen* and *Altec-Lansing* tuners had a built-in preamplifier for use with magnetic cartridges; a plug-in arrangement was used on the *Sargent-Raymont*. All three preamplifiers were of excellent quality; one (the *Altec*) even provided a reasonably satisfactory range of control positions for record compensation.

A. Recommended

Craftsmen C-10 FM-AM Tuner (The Radio Craftsmen, Inc., 4401 N. Ravenswood Ave., Chicago 40) \$132. A compact and easily mounted unit with 11 tubes plus rectifier. Had separate controls for bass, treble, off-on-volume, FM-AM-Phonograph-TV, and tuning. **AM:** Single tuned r.f. stage. Audio band-pass curve down 10 db. with 4000 cycles per second input at a radio frequency of 550 kilocycles, down 10 db. with 6000 c.p.s. at 1000 and 1600 kc. A 10-kc. filter was incorporated in the circuit — desirable. Sensitivity, 12 microvolts at 550 kc., 19 microvolts at 1000 kc., 1 microvolt at 1600 kc. — more than ample. A.v.c.

action, very effective. Selectivity, so designed as to afford reasonably wide band-pass at relatively low distortion. Distortion increased, however, as frequency increased above about 4500 c.p.s. which precluded possibility of using treble-boost to extend usable frequency response. Image rejection, excellent; minimum of spurious responses (see text).

FM: Single tuned r.f. stage. *Armstrong* FM circuit. Sensitivity, very good. Distortion, less than 2% with varying amounts of modulation up to 100% — excellent. Frequency response, excellent. Stability of circuits or lack of tendency to drift after warm-up, excellent, and partly due to rather vigorous a.f.c. action.

Audio: Tone controls can be set to provide an essentially flat response position (unmarked), have wide range of boost and cut, and configuration of response curve is good (slightly improved over previous model in this respect). Preamplifier stage had low noise level and offered good compensation. Gain was adequate. Distortion at 2 volts output was negligible; thus tuner has sufficient output to drive most basic amplifiers. The *C-10* is considered preferable to any of the other tuners in this group if high-fidelity FM reception is particularly desired. The *Craftsmen 800* at \$160 (not tested) is said to use the same AM and FM sections but incorporates a record-equalizing section and a tuning eye. 2

Sargent-Rayment SR-51 "High Fidelity" Radio Tuner (The Sargent-Rayment Co., 1401 Middle Harbor Rd., Oakland, Calif.) \$150. A compact unit easily mounted on either a horizontal or vertical panel. 12 tubes plus rectifier and "tuning eye," latter used on AM and FM. Had separate controls for on-off and volume, treble, FM-Phono-TV-AM selector switch, bass, and tuning. AM and FM tuning sections are separate, a desirable practice since it reduces complications in switching arrangements and does not necessitate compromises in design to the detriment of either the AM or FM section.

AM: Single tuned r.f. stage. Audio band-pass curve down 10 db. at approximately 5500 cycles, but effective band-pass could be extended without added distortion by using treble boost. A very effective 10-kc. filter was incorporated in the circuit. The detector circuit used was quite unconventional but regarded as the first satisfactory one yet observed for high-fidelity use in an AM tuner. Sensitivity, only fair by usual standards, but considered adequate. A.v.c. action good with strong signals, as would be expected. Distortion in output, usually introduced by detector circuit, was very low — desirable. Image rejection was excellent; spurious responses were fairly well suppressed.

FM: Single tuned r.f. stage. Ratio detector circuit. Sensitivity, very good; distortion characteristic, satisfactory for high-fidelity use; about same as *Radio Craftsmen C-10*. Frequency response, excellent. Stability of circuits, excellent; a.f.c. circuit and tuning eye were found helpful in tuning of the receiver.

Audio: The tone controls show careful design, have considerable range for "boost" or "cut" and although

they have an essentially "flat" position, it is not marked. Since the detector output on AM has far better than usual distortion characteristics in the frequency range above 5000 cycles, satisfactory wide-band AM reception is possible (when available) by using the treble control in the "boost" position. Preamplifier not included in price; if the *SR-51* is used with the *Sargent-Rayment SR-88* amplifier, the fully-compensated preamplifier of particularly good noise characteristic is available in the latter. ¶The *SR-51* is to be preferred to any of the tuners listed if high-fidelity reception of AM broadcasting is particularly desired. (There are only a limited number of areas in which the full potentialities of any high-fidelity AM tuner could be realized.) 2

B. Intermediate

Altec-Lansing 303A AM-FM Tuner (Altec-Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, Calif.) \$280. A well-constructed, neat-appearing unit in metal cabinet. 12 tubes plus rectifier and tuning eye; latter used for both AM and FM, but tuning sections are entirely separate (see remark in listing of *Sargent-Rayment SR-51*). Separate controls for record-turnover characteristic, FM-AM-Phono—"Spare" (for TV speaker connection, if desired), on-off and volume, tuning, treble, and bass.

AM: Single tuned r.f. amplifier. Audio band-pass curve down 10 db. at from 5000 to 6500 c.p.s. depending upon dial position and whether manufacturer's suggested modification of circuit for wider band-pass is incorporated. No 10-kc. filter included and some interference due to adjacent channel "beat" may be expected. Detector circuit of conventional design. Sensitivity, only fair, and user would likely have to use an outside antenna. A.v.c. action, very good. Distortion in output, comparable to that present with *Radio Craftsmen C-10*; amount of distortion precludes use of the *303A* for wide-band high-fidelity reception (rarely available; see above). Image rejection, excellent; no spurious responses found.

FM: 2 stage r.f. amplifier, one tuned. Ratio detector circuit. Sensitivity, average. Frequency response and degree of freedom from distortion throughout, satisfactory. Circuit stability was very good; no drift noticed after 10-minute warm-up. Tuner did not have a.f.c. circuit. Tuning eye functioned well when adequate signal was available.

Audio: Audio circuit was same as used in the *Altec-Lansing A-433A* remote control amplifier. Tone controls were considered very satisfactory and somewhat preferable to those used in either the *Sargent-Rayment SR-51* or *Craftsmen C-10*. The 3-step switch for changing crossover frequency selection when playing different records is advantageous. Flat tone-control positions is marked. This tuner is designed for use with the *Altec-Lansing Audio Amplifier Model A333A*, but could also be used with other basic amplifiers having similar characteristics.

¶Poor sensitivity at the high-frequency end of the AM dial, and only average sensitivity on FM. An outdoor antenna should be used, which is desirable anyway, where practicable. 3

C. Not Recommended

Meissner, Model 4E TRF AM Tuner (Meissner Div.; Maguire Industries, Inc., Mt. Carmel, Ill.) \$42. 3 tubes plus rectifier. Controls were volume and off-on switch, Radio-Phono switch, and tuning. Parts were of mediocre quality. Although a tuned-

radio frequency circuit was used, audio band-pass characteristic was similar to that found in conventional superheterodyne circuits (which are inherently ill suited to high-fidelity reception). Selectivity, sensitivity, and a.v.c. action, relatively poor. Distortion, relatively high; unit is thus not suitable for use as broad-band high-fidelity tuner. 2

Leaky Pistons — No Short Cut Will Work

A NUMBER of products now being advertised to consumers are supposed to seal leakage between piston rings and the walls of automobile engine cylinders. The "seals" are a thick "goosey" mixture that is injected into the cylinders of the car through each spark plug hole. They are claimed to give better performance, and to improve gasoline and oil economy, quiet the engine, reduce friction and wear, give easier starting and quicker pick-up.

One of the products for piston sealing is supplied in the form of a few tiny pellets to be added to the fuel tank; these are said to be of a special "extremely powerful" alloy of heavy metals. Minute quantities of the alloy are supposed to be carried in suspension in the gasoline to the engine, where the secret material will then "deposit on the cylinder walls," forming the bearing surfaces; "puts babbitt type surfaces between all the moving parts in the upper cylinders — between the pistons and cylinder walls — between the rings and pistons — between the valve stems and valve guides." The advertiser of this product thought up a number of novel arguments, for besides the usual claims of "better ring seals, without friction," "better compression," "more power," "less oil dilution," "better oil mileage," "better gas mileage," etc., he even asserted that his product "raises the octane rating of the fuel." Sellers of these specialties sometimes use words in their advertising that imply that the product has a really magical action. If they worked as claimed, they really would have!

As to one product for "piston sealing," the advertising doesn't mention it, but the user is supposed to restrict the driving speed for the first 50 miles to under 30 miles per hour; thereafter, to increase the driving speed gradually for the next 100 miles. One of the advertisements strongly emphasizes the great simplicity of the process of applying the product, but the process of using the product is not nearly so simple as the advertising would suggest, for the instructions for the use of *Piston Seal* on 4-cylinder engines alone run to 450 words (there is a

sheet of supplementary instructions containing 12 specific items, approximately 500 words additional). The whole thing, if followed as directed, would be a lot of trouble, and by no means "Simple Installation — Press Tube Contents Into Spark Plug Holes — That's All" — as described in the advertisement.

It is to be noted that at no point in the advertising or sales literature was there any concrete evidence of proved performance in the form of detailed, signed reports of technical tests conducted by engineers of skill and competence in the field of fuels and lubricants for automotive engines, although there are plenty of testimonials from automobile dealers and users — in the usual fashion of automobile chemical specialties.

There is no known soft, greasy, tarry, or waxy material or mixture of these with powdered mineral matter which can be put into the cylinder of an automobile engine which thereafter is capable of effectively preventing piston slap or taking up the clearance between the cylinder walls and the pistons, or preventing cylinder and piston wear as the promoters claim. Consumers should bear in mind if such a method of filling a clearance space between a piston and a cylinder wall subjected to high pressure and high temperatures were known, large manufacturers and users of engines and other machinery would have been using the method before this as a low-cost, quick-working substitute for expensive repairing and reconditioning operations.

An analysis was made of a British-made product, *Piston Seal* (now being widely sold in the United States). This has a consistency similar to commercial liquid grease; it is black in thick layers, dark green in thin layers. Its probable composition, based upon customary methods of analysis, is: cylinder oil, about 78%; naphtha and chlorinated hydrocarbon, 2%; graphite, 7.4%; mica, 10.5%; water, 2%.

When some of the material was distilled, a small amount of a volatile material distilled over. This was quite acid, and was found to contain hydrochloric acid, presumably due to the decom-

position of the chlorinated hydrocarbon. Since the acid substances would be involved in the use of the product in an automobile engine, it is obviously not a desirable additive for use in an automobile engine unless it is considered that the car is "so far gone" that additional corrosion would be of no importance. The mica and the graphite would not appear to be desirable ingredients, as they might tend to cause valve burning. The chemist commented that excessive oil consumption is due not only to worn rings, but to stuck rings and other causes. Obviously with stuck rings, no build-up of mica or graphite will alleviate the oil consumption problem. Even where rings were not stuck, mica and graphite might work into the ring grooves in such a way as to cause the rings to become sluggish, or to stick.

Other causes of oil consumption having a similar effect as worn rings would not be helped by this preparation. It should perhaps be pointed out that while the consumer and many garage workers are likely to blame high oil consumption entirely on leaky pistons, there are at least 15 other reasons why quite frequent replenishment of oil in the engine may be required. Among these are: warped oil pans and oil pans with defective gasket, defective crankshaft seals, clogged rear main bearing drain, bent connecting rod, excessive connecting rod bearing clearance, excessively diluted oil, bad design of breather pipe, or breather pipe clogged, clogged oil drain

holes, worn valve guides. There may be leakage at the rear or the front end of the engine involved in the fit of the bearings and several other factors. (There are at least eight points at which leakage may take place from an engine.) High-speed driving is, of course, another important factor in excessive use of oil.

While *Piston Seal* is promoted as an "inexpensive cure for heavy oil consumption", . . . "Is your car an oil eater? *Holt's Piston Seal* is the remedy," it is obvious that it could at best deal with only a very limited fraction of the causes of oil loss, even if it were possible for it to overcome excessive clearance between cylinder walls and pistons. Even if it be conceded that the product might be worth a trial, if sold on the basis of a firm guarantee to refund the full purchase price if the product does not produce all the results claimed, in an old and "almost finished" engine with badly worn rings and cylinder walls, we believe that few would be inclined to use the material at the possible cost of burned valves, plugged oil holes, or completion of the plugging of oil holes already containing solid material, and increased corrosion of the metal of the engine. (Among the claims to which *Piston Seal* should be held in connection with any money-back guarantee are: that it will improve engine performance — after about 200 miles; more power; more miles per gallon; reduced oil consumption; makes the motor run more quietly; will last about 10,000 miles of driving.)

Abridged Cumulative Index of Previous 1953 Consumers' Research Bulletins

	Month	Page		Month	Page		Month	Page
Appliances			Dishwashers, faucet?	Jan., 16-17		Paints, reference book, review	Jan., 12	
clothes dryer, automatic,			silverware, tarnishing in			Paints and enamels, special?	Jan., 19	
sales increase	Feb., 34		automatic	Feb., 4		Phonograph records?	each issue	
repairs, home	Feb., 2, 16-17		Editorial	each issue, page 2		Photostats, low-priced source?	Jan., 15	
secondhand, merchandising	Jan., 4		Fire extinguishers, portable,			Refrigerator trays, plastic	Feb., 3	
Asthma, bronchial, allergic			booklet review	Feb., 14		Roof gutters, pamphlet		
disease	Feb., 4		Fluoridation of water supplies	Jan., 4		review	Feb., 11	
Automobiles			Food choppers, without table	Feb., 8-9		Sewing machines		
anti-static agents for seat			clamps?	Jan., 4		blind stitch attachment	Jan., 26-27	
covers?	Jan., 20-21		Foods, frozen, selection	Jan., 4		thread tension adjuster	Jan., 26-27	
driving costs	Feb., 3		orange juice, vitamin C	Feb., 3		"zigzag" (Singer)?	Feb., 15-16	
M.G. (British car)?	Jan., 18-19		content			Silverware, discoloration in		
night driving, problems	Feb., 20-22		Hearing aids, misleading	Feb., 18-20		automatic dishwashers	Feb., 4	
1953 Dodge?	Feb., 23-24		advertising?	Feb., 18-20		Smog, prevention	Jan., 3	
oil additives	Feb., 23-24		Heating equipment			Snow plow?	Feb., 17	
running without oil	Feb., 24		furnaces, floor, gas- and			Soap, losing to synthetic		
tires?	Jan., 10-12		oil-fired?	Feb., 12-14		detergents	Feb., 3	
winterized and mud-			radiation, baseboard?	Jan., 5-9		Soil conditioners, misleading		
snow, effectiveness	Jan., 25-26		High-fidelity reproduction,			advertising?	Jan., 33	
used, ample supply	Jan., 33-34		popularity	Jan., 3		Storage space in the home,		
utility tray?	Feb., 34		Humidity indicators?	Feb., 5-7		bulletin, review	Jan., 30	
Blankets, wool, care	Feb., 4		Iron-cord holder?	Jan., 27-28		Table, folding?	Jan., 28	
Cleaners, copper and brass?	Feb., 10-11		Laundry cart?	Jan., 27-28		Television receivers, 1953?	Jan., 13-15	
Clothing, fabrics			Logs, fireplace, insect infestation	Jan., 3		Thermometers, clinical?	Jan., 24-25	
flammable, hazard	Jan., 4		Medicine, containing			Toothpaste, misleading		
proper labeling	Jan., 2, 29-30		acetanilide, danger	Feb., 33-34		advertising?	Jan., 4, 33	
wool vs. synthetic	Jan., 3		Motion pictures?	each issue		Towels, bath?	Jan., 22-23	
Gold "cures," many ineffective	Jan., 34		Mural photographic facsimiles?	Jan., 34		Transparencies, color, storing	Jan., 17	
Corrections and						Tulip bulbs, sales misrep-		
emendations?	Jan., 21; Feb., 7					resentation	Feb., 4, 33	
Creams, estrogen or hormone,						Water softening and equip-		
care in use	Feb., 4					ment?	Feb., 25-30	

†Indicates that listings of names or brands are included.

Dish Towels

Tests show woven towels do not differ much in absorbency

BY FAR the most important property of a dish towel is its ability to absorb water. Other desirable, but less important, qualities are launderability, low linting, a good "hand" (that is, softness and pliability), durability (indicated by breaking strength), and resistance to shrinking. Few housewives would be happy with a long-wearing towel that did not absorb water well and therefore did not dry dishes satisfactorily. Thus the towels in CR's test were judged first on their water-absorbing qualities.

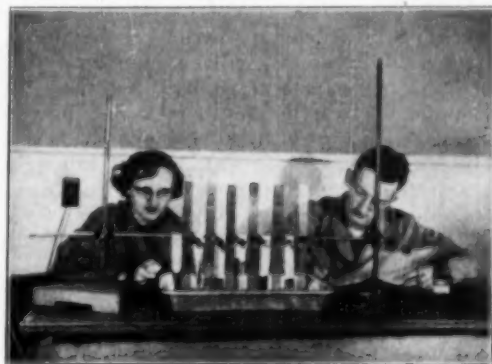
Woven towels made of all cotton, all linen, cotton-linen mixtures, and rayon-cotton-linen mixtures were included in this study. Also included were some non-woven "plastic rayon" towels. The rate of absorption (an indication of whether the moisture will spread out quickly, making a towel uniformly damp, or will not spread out promptly, so that it remains wet in spots and relatively dry in others) was fair for all woven towels and very good for the non-woven "plastic rayon" *Rainbow* towels. Contrary to the common belief that linen is best of all for water absorption, the linen towels in this test did not absorb water more quickly than the others. The total absorption (amount of water absorbed) of all the towels except the *Wilendur* met the American Standard (L22.3.6) minimum requirement of 200 percent water absorption for glass toweling. The *Rainbow* "plastic rayon" towels showed total absorptions ranging from 500 to 600 percent, but these towels had disadvantages in other respects.

Except for decorative use, housewives would hardly find it practical to have dish towels that required special laundering. On this account, the non-woven *Rainbow* towels which should not be washed in a washing machine would be of only limited use for most homemakers. The *Rainbow* towels in CR's test successfully withstood five hand washings without apparent deterioration. One pulled apart during the service tests after five washings. CR washed the woven towels in 160°F water — about as hot as would be found in any home or commercial laundry.

All towels, except the *Leacock* towel, were colorfast and did not stain white cotton cloth washed with them. White wool, viscose, silk, acetate, or nylon cloth did pick up dye from some of the towels. CR did not consider this of particular importance, however, because these fabrics are not likely to be washed in the same washer load with towels.

Only two of the woven towels left appreciable lint on glass goblets after five laundings, and all but five were judged sufficiently soft and pliable to be convenient to use (that is, they had a good "hand").

All other things being nearly equal, the towels that will give the best service will be the ones that are strong. Breaking strength is the principal indication of strength of a fabric, and in CR's opinion, towels should have breaking strengths not less than 50 pounds per inch of width of a strip lengthwise, and 40 pounds per inch across. Only two of the 18 woven towels failed to meet the requirements for breaking strength. The strongest towel was a *Stevens* towel that was 54 per-



The test for rate of absorption (Weirick Test Method, American Standard Association Standard L22.4.2). A towel is rated "fair" if the water rises vertically in a strip one inch wide two to three inches in 10 minutes. A rise of three to four inches is rated "good" according to the Standard.



The Webb towel at the top isn't "all linen," as the label says if read fully. Labels on towels are not always as clear as they might be. The Stevens towel below does have a linen weft but is not all linen, as one learns on reading the smaller print at the bottom of the label.

cent linen and 46 percent cotton. There was no relationship to be found between the kind of fabric and the strength of the towel, however, for the two weakest woven towels in the test also were linen-cotton combinations. The rayon plastic towels were notably weak, for they had a breaking strength of 10 pounds per inch or less in each direction.

Shrinkage of a dish towel is of no great importance, provided the towel is 28 inches long after shrinking (this would permit a maximum of 12.5 percent shrinkage for a towel 32 inches long). A towel 28 inches long is long enough to wipe the inside and outside of a tall glass at the same time and to cover the hands so that no fingerprints are left on the glass. None of the towels shrank more than 10 percent in width, but eight shrank more than 10 percent in length. Maximum shrinkage in length was 13 percent (in a towel 35½ inches long). Shrinkage in length was less than 10 percent except as noted.

Price ratings are based on price per towel and do not take into consideration the sizes of the towels, which varied over the range of approximately 15 x 29 inches to 18 x 36 inches.

A. Recommended

Cannon (Cannon Mills, 70 Worth St., New York 13; Sears-Roebuck's Cat. No. 136-6558) 4 for \$1, plus

postage. Red and white checked pattern. Cotton. Shrinkage, 11.9%. **1**

Cannon (Cannon Mills; Montgomery Ward's Cat. No. 16-4438) 4 for \$1.35, plus postage. White with red, green, blue, and yellow striped design. Cotton. Shrinkage, 12.5%. **1**

Harmony House (Boott Mills, Lowell, Mass.; Sears-Roebuck's Cat. No. 136-6562) 6 for \$1.23, plus postage. White with red and blue borders. Cotton. **1**

Morgan-Jones (Morgan-Jones, Inc., 58 Worth St., New York 13) 35c. White with red, blue, and green stripes. Cotton. Shrinkage, 11.9%. **1**

Startex Twinkle Towel (Startex Mills; Montgomery Ward's Cat. No. 16-4425) 6 for \$1.92, plus postage. White with red border stripes. 75% cotton and 25% linen. **1**

Startex (Startex Mills, Startex, S.C.) 39c. White with red and pink border stripes. 65% cotton and 35% linen. Shrinkage, 11.4%. **2**

Startex (Startex Mills; Montgomery Ward's Cat. No. 16-4451) 45c, plus postage. White with border stripes and Mexican design. 75% cotton and 25% linen. **2**

Stevens (Stevens Linen Associates, Inc., 40 Worth St., New York 13) 39c. White with red border stripes. Linen with cotton border. **2**

Webb's Towel (Webb Co. Linens, 51 White St., New York 10; made in Ireland) 79c. White with blue and white diagonal border design. Linen with cotton border. **3**

B. Intermediate

The following towels were rated as less desirable than the foregoing because they were considered a little stiff in use; they were satisfactory in other respects.

Cannon (Cannon Mills) 29c. White with red, yellow, black, and blue stripes. Cotton. Shrinkage, 12.5%. **1**

Fieldcrest Easi-Dri (Fieldcrest Mills, Div. of Marshall Field & Co., Inc., 88 Worth St., New York 13) 35c. White with gray and red border and center stripes. Cotton. **1**

Stevens Sunshine Towel (Stevens Linen Associates, Inc.) 35c. White with red, blue, yellow, and green border and center stripes. 46% cotton and 54% linen. Breaking strength in length direction, 79 lb.; in width direction, 92 lb. — best in this respect of all the towels tested. Shrinkage, 11.9%. **1**

Cannon Rapidry (Cannon Mills) 39c. White with red, pink, yellow, green, and blue stripes. Cotton. Shrinkage, 12.5%. **2**

The following two towels were not so strong as the A-Recommended towels but were found satisfactory in other respects.

Startex (Startex Mills; Sears-Roebuck's Cat. No. 136-6551) 6 for \$1.39, plus postage. White with

red and black border stripes. 85% cotton and 15% linen. Total absorption, highest of all woven towels tested. **1**

Startex (Startex Mills; Sears-Roebuck's Cat. No. 136-6701) 3 for \$1.17, plus postage. White with red black and cherry design. 75% cotton and 25% linen. **1**

Leacock (Leacock Inc., 230 Fifth Ave., New York 16) \$1. White with street scene printed in yellow, red, gray, green, and black. Linen. Not colorfast to commercial laundering; green lost color, black ran. Would require special handling in laundering. **3**

Martex Dry-Me-Dry, Style 1556 (Wellington Sears Co., 65 Worth St., New York 13) 59c. White with red, yellow, green, and blue border stripes. Cotton, rayon, and linen. A little stiff in use; left some lint on goblets in service test. Shrinkage, 13.1%, highest of all woven towels tested. **3**

Wilendur (Distributed by H. Leh & Co., Allentown, Pa.) 69c. White with green border design and red, blue, and green flowered pattern. Cotton. Total absorption, slightly below standard. Left some lint on goblets in service test. **3**

* * *

These towels are less useful on the whole than the other towels tested.

Rainbow Towels (Unique Products, Inc., St. Petersburg, Fla.) 6 for \$1. White, pink, yellow, blue, green, and orchid towels. Non-woven plastic rayon. Rate of absorbency and total absorbency, very good. Breaking strength in both length and width directions, very low. Stiff when first used, but became wet and pliable before five glasses were dried. Linting was excessive after the towel had been used a few times. From CR's tests, indications are that the *Rainbow* towels would not have a long life in use.

Insecticide Vaporizers — They Should Not Be Used in Homes

A NUMBER of manufacturers are now offering devices that vaporize an insecticide by means of an electric heating unit, for the purpose of controlling flies and other flying insects in homes, stores, and offices. The insecticides used in these vaporizers are lindane (gamma isomer of benzene hexachloride), DDT, or a mixture of the two. As CR noted in its July 1952 BULLETIN, whether the vaporizers will be effective or not will depend in part on the resistance that has been developed by flies in the particular locality to the insecticidal chemicals. The existence of strains of flies resistant to DDT has been known for some time, and has been a source of concern to experts in the field of insect control. Now it is learned that where lindane has been used for a season or two, flies have sometimes survived the treatment, as though developing an immunity to the poison.

Numerous cities and states now have regulations covering the operation of the vaporizers. Most of these are based on the regulations and suggestions made in a 1951 statement of the Interdepartmental Committee on Pest Control on the health hazards in the use of insecticide vaporizers. On October 22, 1952, the Committee (which represents the Departments of Agriculture, Interior, and Defense, and the Federal Security Agency) revised this statement in the direction of greater stringency. The new statement emphasized once again that the devices should not be used in homes or sleeping quarters, or for prolonged periods in any location, as

where persons will be exposed to the insecticide for periods beyond a normal working day. The new release, however, also recommends that the vaporizers should not be used in rooms or areas where food is served, processed, or stored *unless it can be demonstrated that contamination does not occur.* [Italics CR's.] Presumably, it is now up to the manufacturer of a device to construct it so that excess output is impossible and to *prove* that it is safe under all conditions of use. That is as it should be.

CR doubts that vaporizers should ever be permitted to operate in a room where food is served, regardless of what the manufacturer or salesman says about its alleged harmlessness. Consumers should further be guided by the recommendation that the devices should never be used in homes — where the long time of exposure during both daytime and night hours would greatly increase the hazard. Consumers should always bear in mind that a chemical which kills insects *is never free from danger to human beings* (especially to young children). Research is still going on to determine more accurately the toxicity of lindane, including its absorption by the lungs and into food. Until the results of these and other investigations are known, everyone might well draw the same conclusions as the California State Board of Public Health, which noted that at present "it is impossible to develop a program of safe regulation for lindane dispensers and that the only plausible course at present is to discourage insecticide vaporizers."

The Effectiveness of So-Called Fog Lamps

BY MATTHEW LUCKIESH

THE USE of so-called fog lamps on automobiles can be justified only if the lamps increase the visibility of objects, including the edges of the roadway immediately ahead. This result cannot be achieved if the fog lamps illuminate the fog directly in the line of vision, for such illumination produces a bright veil which tends to conceal the objects ahead. The result is similar to that achieved by white paint on the screen door of a tavern. With such a door illuminated by daylight outdoors, it is difficult or even impossible to see objects in the interior which are dimly illuminated compared with the outdoor surface of the white screen. Such a trick has been widely used on the stage and in creating "illusions." A white net, or screen, illuminated on the side next to the observer, conceals the objects or settings behind it until the latter are lighted sufficiently or until the illumination from the audience side is greatly reduced.

If fog lamps are used on automobiles, (1) they should be installed low at about the height of the front bumper; (2) they should have a "sharp cut-off" so that no appreciable light is emitted above the horizontal plane through them; and (3) it is well to direct the light somewhat below the horizontal plane. They should never be installed at a height above the headlamps. If they are located at the height of the headlamps, they serve no better purpose than the headlamps do.

Fog lamps can have some value under foggy conditions if properly installed. However, it has been adequately proved that *there is no significant value of yellow light* (or light of any other color) over the ordinary light from tungsten-filament automobile lamps. We have commented on the lack of special fog-penetrating values in yellow light in previous BULLETINS, as far back as 1937, but the work of Matthew Luckiesh and L. L. Holladay (Penetration of Fog by Light from Sodium and Tungsten Lamps, *Journal of the Optical Society of America*, 31, 1941, 528) proved conclusively that yellow light does not penetrate fog significantly more than colorless light. They did not rely upon the opinions or introspective appraisals of observers. They made actual measurements of the visibility of circular light sources of monochromatic yellow light (sodium light) and of ordinary tungsten-filament light. (The two light sources were always

of the same size and brightness.) Measurements were made at a given distance under various atmospheric conditions described as fairly clear, moderate fog, dense fog, mist, and snowing. Their work showed conclusively that the yellow sodium light did not "penetrate" under any of these atmospheric conditions better than the ordinary tungsten light. Therefore, there cannot be any advantage of a yellow lens over a colorless lens in a fog lamp for the penetration of fog. Their results are the more conclusive in that they were obtained with a yellow light of the same brightness and candlepower as the ordinary tungsten automobile light (which favored the yellow light because of the fact that when, as in actual practice, a yellow lens replaces a lens of colorless glass, the brightness and candlepower of the light source are considerably reduced).

* * *

EDITORIAL NOTE:

Since the above article was written, it has come to the attention of Consumers' Research that the police in Paris, who have evidently not familiarized themselves with the competent English and American research in this matter of yellow light in fog, announced (according to a correspondent for the Chicago Tribune Press Service) that all automobiles in Paris must be equipped with yellow lights, and that cars with ordinary white headlamps must use only their parking lights while in the city. Paris, according to a well-qualified expert in illumination, has been a fertile field for the erroneous ideas in regard to the values of yellow light, and the enforcement of the yellow light requirement by the Paris police merely represents renewal of enforcement of an old ordinance which was relaxed during the war and the following period due to the shortage of yellow bulbs. It has been mentioned that with automobiles driving with parking lights instead of regular headlights in the city, the crossing of main thoroughfares is fraught with grave danger for the pedestrian; thus in attempting to eliminate a hazard by improving visibility of objects in the path of the motorist, the Paris police officials, because of the incorrectness of their information in regard to the effectiveness of yellow lights, have created an even greater danger for those on foot.

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines — some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, Cus., Daily News (N.Y.), The Exhibitor, Harrison's Reports, Joint Estimates of Current Motion Pictures, Motion Picture Herald, National Legion of Decency List, Newsweek, New York Herald Tribune, New York Times, New York World-Telegram & Sun, Parents' Magazine, Release of the D.A.R. Preview Committee, Reviews and Ratings by the Protestant Motion Picture Council, Time, Times Herald (Washington, D.C.), Variety (weekly), Weekly Guide to Selected Motion Pictures (National Board of Review of Motion Pictures, Inc.).

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), or C (not recommended) on its entertainment values.

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adr—adventure	mel—melodrama
biog—biography	mus—musical
c—in color (Technicolor, Cinecolor, Trucolor, Magnacolor, Vitacolor, etc.)	mys—mystery
car—cartoon	nov—dramatization of a novel
com—comedy	rom—romance
cri—crime and capture of criminals	sci—science fiction
doc—documentary	soc—social-problem drama
dr—drama	trav—travelogue
fan—fantasy	war—dealing with the lives of people in wartime
hist—founded on historical incident	wes—western

A	B	C	
—	6	1	Abbott and Costello Meet Captain Kidd.....mus-com-c AYC
3	4	2	Above and Beyond.....war-dr AY
—	6	11	Affair in Trinidad.....mel A
—	1	4	Affairs of a Model (Swedish).....dr A
—	4	11	Against All Flags.....adv-c AY
2	8	2	Amazing Mr. Fabre, The (French).....biog AY
—	7	9	Androcles and the Lion.....com A
—	2	4	Angel Face.....cri-mel A
—	2	4	Angel Street (British).....dr A
—	2	4	Angelo in the Crowd (Italian).....soc-dr A
—	4	1	Anna (Italian).....dr A
—	6	3	Apache War Smoke.....wes A
1	5	6	April in Paris.....mus-com-c A
1	5	1	Arctic Flight.....mel AYC
—	—	5	Army Bound.....mel AYC
—	10	6	Assignment — Paris.....cri-mel AY
—	—	6	Babes in Bagdad.....adv-c A
4	4	3	Bad and the Beautiful, The.....dr A
—	4	4	Battle Zone.....war-mel A
—	1	3	Battles of Chief Pontiac.....hist-mel AYC
3	9	—	Beauty and the Devil.....dr A
—	8	7	Because of You.....dr A
2	14	2	Because You're Mine.....mus-dr-c AYC
—	—	4	Bela Lugosi Meets a Brooklyn Gorilla.....cri-com AYC

A	B	C	
—	3	7	Berliner, The.....fan A
—	8	9	Big Jim McLain.....mel A
—	4	11	Black Castle, The.....cri-mel A
—	6	5	Blackbeard, the Pirate.....adv-c A
—	7	2	Blazing Forest, The.....mel-c AYC
—	13	3	Bloodhounds of Broadway.....mus-com-c A
—	3	2	Blue Canadian Rockies.....wes-c AYC
—	9	1	Bonzo Goes to College.....com AYC
—	9	1	Brandy for the Parson (British).....com A
—	6	3	Brave Don't Cry, The (British).....dr A
—	3	2	Breakdown.....mel A
7	5	1	Breaking Through the Sound Barrier (British).....dr AY
—	—	4	Bwana Devil.....mel-c A
—	4	1	Cairo Road (British).....mel A
—	—	8	Captain Black Jack (British).....mel A
—	5	4	Captain Pirate.....adv-c A
—	1	7	Captive Women.....sci A
—	6	5	Caribbean.....adv-c A
—	4	4	Casque d'Or (French).....dr A
—	5	2	Castle in the Air (British).....com AYC
—	3	4	Cattle Town.....mus-wes AYC
—	6	5	Cinerama.....doc-c AYC
—	2	3	Cliff of Sin, The (Italian).....dr A
1	3	3	Clown, The.....dr AYC
4	12	2	Come Back, Little Sheba.....dr A
—	13	4	Crimson Pirate, The.....adv-c AYC
—	2	2	Cupboard Was Bare, The (French).....com A
—	1	2	Curtain Up (British).....cri-mel A
—	2	1	Dark Man, The (British).....cri-mel AYC
—	2	1	David (British).....doc-dr AYC
—	6	2	Desperadoes' Outpost.....wes AYC
—	3	2	Desperate Search.....mel A
—	11	5	Devil Makes Three, The.....mys-mel A
—	2	9	Dreamboat.....com A
2	11	5	Eight Iron Men.....war-dr A
1	10	5	Everything I Have is Yours.....mus-com-c A
—	12	2	Face to Face.....dr A
—	1	3	Fall of Berlin, The (USSR).....war-dr-c A
—	3	1	Fargo.....wes AYC
1	6	2	Father's Dilemma (Italian).....com AYC
—	2	2	Feudin' Fools.....com AYC
—	6	3	Fiat Top.....war-mel-c AYC
—	5	4	Flowers of St. Francis (Italian).....doc-dr AYC
4	5	1	Forbidden Games (French).....war-dr A
1	9	8	Four Poster, The.....dr A
—	2	4	French Way, The (French).....mus-com A
—	—	4	Gambler and the Lady (British).....cri-mel A
—	1	4	Girls in the Night.....cri-mel A
—	1	3	Gods of Ball.....doc AY
—	3	—	Gold Fever.....mel AYC
—	3	11	Golden Hawk, The.....adv-c A
—	9	4	Hangman's Knot.....wes-c A
5	11	1	Hans Christian Anderson.....mus-com-c AYC
1	12	3	Happy Time, The.....com A
—	6	2	Hellgate.....mel A
1	3	6	Hiawatha.....hist-dr-c AYC
—	—	3	Hideout, The (British).....cri-mel A
—	4	1	Hitch Hiker, The.....cri-mel A
1	2	—	Hoaxters, The.....propaganda-doc AYC
—	—	4	Hold That Line.....com AYC

A	B	C		A	B	C	
—	8	5	Horizons West.....	—	6	3	Ring, The.....
—	11	6	Hour of 13, The.....	3	7	1	Road to Bali.....
—	4	12	Hurricane Smith.....	—	2	3	Rogue's March.....
—	3	3	I Don't Care Girl, The.....	1	6	1	Rose Bowl Story, The.....
—	4	5	Invasion, U.S.A.....	—	5	10	Ruby Gentry.....
—	4	11	Iron Mistress, The.....	—	11	5	Savage, The.....
2	9	2	It Grows on Trees.....	—	7	2	Savage Triangle (French).....
—	8	2	Jazz Singer, The.....	—	—	4	Scotland Yard Inspector
—	4	3	Julius Caesar.....	—	—	—	(British).....
—	3	5	Jungle, The.....	—	3	—	Sea Around Us, The.....
2	9	6	Just for You.....	—	2	5	Sea Tiger.....
—	8	6	Kansas City Confidential.....	—	1	5	Secret People (British).....
—	1	5	Kid from Broken Gun, The.....	—	4	3	Skipper Next to God (French).....
—	1	3	La Forza del Destino (Italian).....	—	5	4	Sky Full of Moon.....
—	5	2	Last of the Comanches.....	3	11	4	Snows of Kilimanjaro, The.....
—	1	10	Last Train from Bombay.....	—	12	6	Somebody Loves Me.....
—	7	2	Lawless Breed, The.....	—	11	2	Something for the Birds.....
1	6	3	Leonardo da Vinci.....	—	4	8	Son of Ali Baba.....
—	4	3	Life Begins Tomorrow (French).....	—	6	3	South Pacific Trail.....
—	—	3	Life of Donizetti, The	—	10	4	Springfield Rifle.....
—	—	—	(Italian).....	2	2	1	Star, The.....
1	13	3	Limelight.....	1	2	1	Star of Texas.....
—	7	3	Little World of Don Camillo, The	5	12	1	Stars and Stripes Forever.....
—	—	—	(French).....	—	9	6	Steel Trap, The.....
—	1	9	Lost in Alaska.....	1	5	1	Stooge, The.....
—	9	7	Lure of the Wilderness.....	—	7	5	Stop, You're Killing Me.....
—	15	1	Lusty Men, The.....	—	2	7	Strange Fascination.....
1	8	4	Magic Box, The (British).....	—	4	5	Strange Ones, The (French).....
—	3	3	Magic Sword, The (Yugoslav).....	2	12	2	Stranger in Between, The (British).....
—	2	4	Man Behind the Gun,	—	—	3	Streets of Sorrow (Italian).....
—	—	—	The.....	—	2	4	Strollers, The (French).....
—	3	3	Man with the Grey Glove, The	1	14	4	Sudden Fear.....
—	—	—	(Italian).....	—	5	3	Target Hong Kong.....
—	1	3	Maverick, The.....	1	3	2	Taxi.....
—	7	—	Meet Me at the Fair.....	2	14	2	Thief, The.....
—	4	9	Member of the Wedding, The.....	—	6	9	Thief of Venice, The (Italian).....
—	3	—	Merry Wives of Windsor	—	1	4	Thirst of Men, The (French).....
—	—	—	(German).....	—	1	7	Thunder in the East.....
1	14	2	Million Dollar Mermaid.....	—	3	5	Thunderbirds.....
1	12	3	Miracle of Our Lady of	—	3	1	Thundering Caravans.....
—	—	—	Fatima, The.....	—	2	5	Topaze (French).....
—	3	2	Mississippi Gambler, The.....	—	6	4	Torpedo Alley.....
1	8	8	Monkey Business.....	—	7	1	Toughest Man in Arizona.....
—	3	8	Montana Belle.....	—	—	3	Train of Events (British).....
—	1	3	Montana Incident.....	—	1	5	Tromba, the Tiger Man
1	5	—	Moulin Rouge.....	—	—	—	(German).....
—	—	6	Mr. Walkie-Talkie.....	—	7	2	Tropic Zone.....
1	10	4	My Cousin Rachel.....	—	1	5	Tropical Heat Wave.....
—	5	10	My Man and I.....	1	9	5	Turning Point, The.....
1	7	1	My Pal Gus.....	3	6	1	Two Cents' Worth of Hope
—	3	6	My Wife's Best Friend.....	—	—	—	(Italian).....
1	4	—	Naked Spur, The.....	1	6	3	Under the Paris Sky (French).....
1	4	1	Never Wave at a WAC.....	—	13	1	Under the Red Sea.....
—	4	2	Niagara.....	—	7	5	Untamed Frontier.....
—	1	12	Night without Sleep.....	—	—	5	Untamed Women.....
—	7	6	No Time for Flowers.....	—	—	4	Volcano (Italian).....
2	10	3	O. Henry's Full House.....	—	1	9	Voodoo Tiger.....
—	7	1	Old Oklahoma Plains.....	—	3	2	Voyage to America (French).....
—	10	7	Operation Secret.....	—	6	3	WAC from Walla Walla, The.....
—	6	7	Outpost in Malaya.....	—	2	3	Wagon Team.....
—	6	8	Park Row.....	—	7	8	Way of a Gaucho.....
—	9	2	Path of Hope (Italian).....	2	8	5	What Price Glory?.....
—	5	2	Pathfinder, The.....	—	7	5	White Line, The
4	2	—	Peter Pan.....	—	—	—	(Italian).....
3	10	5	Plymouth Adventure.....	—	7	6	Willy and Joe Back at the
1	8	6	Pony Soldier.....	—	3	1	Front.....
6	12	—	Prisoner of Zenda, The.....	—	5	7	Winning of the West.....
1	14	2	Promoter, The (British).....	—	—	—	Woman of the North Country.....
—	7	4	Raiders, The.....	—	4	5	Yankee Buccaneer.....
—	8	2	Rainbow 'Round My	—	9	5	You for Me.....
—	—	—	Shoulder.....	—	1	3	Young Chopin (Polish).....
—	8	3	Redhead from Wyoming.....	—	2	5	Young Wives' Tale (British).....
—	6	2	Ride the Man Down.....	—	—	—	—

The Consumers' Observation Post

(Continued from page 4)

VARIOUS TYPES OF "TWIST" CARPETING are becoming popular, according to a recent issue of Testing League, a monthly bulletin put out by United States Testing Company. The chief difference between this type and the so-called plush type or cut-pile is in the yarn, notes the article. There are about seven turns per inch of twist, instead of the usual three or more, which makes a hard, tightly curled yarn that when made up is reported to have less tendency to show soil, crushing, and footmarks. It also has good durability.

* * *

THE HOME FOOD FREEZER may be a convenience, but frozen foods are not so economical as the unfrozen varieties, was the conclusion of a meeting of eastern state extension workers late last year. In one study of a frozen food freezer plan made at Ithaca, N.Y., it was found that the cost of food used under this plan was 14 cents more per pound than for food purchased at the grocery store, when the cost of ownership and operation of the freezer were taken into account. Home frozen meat, where a consumer purchases a whole side and has it cut and processed for freezing, will often prove to be more expensive on an over-all basis than meat purchased at the store, particularly when in buying at retail a careful selection is made to take advantage of week-end specials and "loss-leaders." There is no doubt, however, that an increasing number of families are looking with favor on frozen foods of various kinds, with frozen orange juice still ahead of all others.

Others tell of CR's money-saving aid that you, too, may share



Nurse saves money: "I became a subscriber to your interesting Bulletin this year and have found that it has saved me many dollars."—New York City

Homemaker is enlightened: "We feel we owe CR a note of thanks for the information about home freezers and food-freezer plans. We were interested in . . . [one particular plan] until we read your informative articles and realized that we were not getting the bargain it appeared. . . ." — Cedar Rapids

Finance director relies on CR: "It seems funny to realize how much, ever since I started my subscription to CR, I have come to be dependent on your advice and good judgment in making selections; be it photo equipment or shoe polish, radios or razor blades. Reading your reports before deciding which to get has proven to be economical and reliable . . ." — New York City

Enthusiastic letters from subscribers telling of savings made in their purchases by following CR's advice are an old, but always welcome story. They are ever fresh testimony that you can rely on CR for authoritative, impartial, straightforward advice and information on products. Ratings by brand name are based on the skilled judgment of technical experts and scientific tests of the leading brands or makes on the market. CR's investigating experts have only one thought in mind — to determine the essential effectiveness of a product in terms of performance, economy, durability, and safety from the point of view of the consumer. In making plans to purchase some major household appliance, be sure to consult CR Bulletin before making your final decision. It will enable you to buy with a high degree of certainty that you are getting the best value for your money. Make use of the reports of expert engineers who have carefully tested products for performance and economy.

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SINCE MAN NO LONGER NEEDS HIS SENSE OF SMELL to help him procure the necessities of life, the acuteness of his olfactory sense has degenerated, commented Dr. Raoul Pantaleoni, of a New York chemical firm, in a recent speech. In fact, Dr. Pantaleoni advanced the theory that anosmia or "odor-blindness" was more common than color-blindness. In order to perceive odor properly, it is necessary to inhale deeply, and many people do not breathe with sufficient force to get the full effect of a perfume, in Dr. Pantaleoni's opinion. Oddly enough, he reported that the success of a perfume depended chiefly, not on its fragrance, but on its name and the type of merchandising used to launch it; perfumes which have failed to achieve initial success have sold successfully when renamed and repackaged.

* * *

MORE FREQUENT SERVING OF BREAD, cakes, pies, doughnuts, biscuits, and crackers is the aim of Baker's Weekly. It appears that dairy products, meats, poultry, fish, fruits, and vegetables are all enjoying increased sales. Grain products and potatoes on the other hand are experiencing a steady decline. The first thing a diet-conscious lady thinks of apparently when she decides to reduce is to eliminate potatoes, bread, pastry, and other starches.

* * *

NATURAL WOOL is being replaced by synthetic fibers so rapidly that within 10 years the United States may not need to buy any wool from Australia, warns Professor T. G. Hunter of the University of Sidney. The professor commented that Australian wool-marketing methods were medieval and that country's national policy with respect to wool industry suicidal. Consumers in the United States could put it much more simply; wool prices which were held at exorbitant levels for too long a period in the post-war readjustment days forced American manufacturers to find substitutes that would enable them to turn out wearing apparel and other products at prices consumers were willing to pay. As nearly always happens when American inventiveness is faced with a challenging problem, substitutes were found of so much promise that when development is completed they show considerable possibilities of being quite as serviceable and cheaper than the original.

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Phonograph Records

BY WALTER F. GRUENINGER

Please Note: In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended. Although nearly all new releases of serious music are heard, space narrows comment, generally, to items which merit high ratings.

Beethoven: *Symphonies Nos. 2 and 4.* Philharmonic-Symphony Orchestra of N.Y. under Walter. Columbia ML 4596. \$5.45. Mellow, unhurried performances as usual from Bruno Walter. Rich recording though the high frequencies are not as brilliant as today's best. With the release of this disk Columbia announces it has achieved the longest playing 33-1/3 rpm. disk ever released (65 minutes).

**Interpretation AA
Fidelity of Recording A**

Donizetti: *Don Pasquale.* Aymaro, Oncina, Schmiedinger, Colombo, Luise with the Orchestra of the Vienna State Opera and the Vienna Kammerchor under Quadri. 4 sides, Westminster WAL 206. \$11.90. Donizetti's comic opera is recorded with excellent balance and wide range. And the direction is understanding. But the voices certainly are not the best that could have been found, though they are never bad. . . . Urania's new recording of this opera is on the whole sung with less polish and is recorded with less fidelity.

**Interpretation A
Fidelity of Recording AA**

Mozart: *Così Fan Tutte.* Steber, Tucker, Guarrera, Thebom, etc., and the Chorus and Orchestra of the Metropolitan Opera under Stiedry. 6 sides, Columbia Set SL 122. \$16.35. A marvelous score and a rather silly plot which can be followed closely because of the clear enunciation of the performers and the outstanding fidelity of the recording. Obviously the Metropolitan Opera cast is well trained and the artistic level of the enterprise is very high. If you want the opera in English, this is your set. . . . Remington's new economy set (\$7.47) sung in Italian by a German cast is palatable, but it falls short of Columbia's performance and fidelity.

**Interpretation AA
Fidelity of Recording AA**

Moussorgsky: *Boris Godounoff.* Christoff, Pasternak, Gedda, etc., with the French National Radio Orchestra under Dobrowen. 8 sides, RCA Victor LHMV 6400. \$23.80. What a magnificent set! Powerful music — "nationalism elevated to an almost epic grandeur" — powerfully, dramatically performed. Boris Christoff as Godounoff is top-drawer and there isn't a weak member in the cast of predominately Russian names, recorded in France, singing in Russian. Issay Dobrowen, the conductor, is no stranger to record collectors spanning two decades. He is at the peak of his form here. Fortunately the reproduction is potent and full and wide range.

**Interpretation AA
Fidelity of Recording AA**

LOW-PRICED COLUMBIA AND VICTOR LP'S

I have listened to 13 disks in Columbia's new Entré series — 12-inch LP's listing at \$3.08. All were previously released on 78's — most of them over a dozen years ago. None were highly recommended then for performance nor fidelity, so in no sense are these LP's equal to the best available at standard list prices. As a matter of cold opinion, Columbia should either improve its releases or discontinue this series. The following Entré disks impressed me as having more value than the others: Handel's *Water Music* and *Royal Fireworks Music* (excellent performance, poor recording); Mendelssohn's *Scotch Symphony* (good performance, fair recording); *Hansel und Gretel Suite* (good performance, fair recording).

On the other hand, Victor's Bluebird Series of 12-inch LP's selling for \$3.10 offer post-war recordings which have been taken, for the most part, from the HMV catalog. Overall, they are far superior to the Entré series — so far as I can judge from half a dozen disks. The surfaces seem a little less quiet than the current Red Seal surface which is just about the best yet to be had on LP's. Choice Bluebirds I have heard: Beethoven's *Piano Concerto No. 3* (excellent performance and recording); *Scheherazade* (excellent performance, good recording); Borodin's *Symphony No. 2* (excellent performance, good recording).

OTHER LP'S HIGHLY RECOMMENDED (for interpretation and for fidelity)

BACH GUILD — *The Passion According to St. Matthew.* Soloists and Combined Berlin Chamber Chorus under Koch. 4 sides, BG 519/20.

COLUMBIA — **Gould:** *Fall River Legend.* Philharmonic-Symphony Orchestra of N.Y. under Mitropoulos & **Gottschalk:** *Cakewalk.* Philadelphia Orchestra under Ormandy. ML 4616.

Anna Russell Sings? ML 4594.

CONCERT HALL SOCIETY — **Mozart:** *Piano Concerti Nos. 3 and 4.* Balsam with the Winterthur Symphony Orchestra under Ackermann. CHS 1163.

DECCA — **Dvorak:** *Carnaval Overture & Berlioz: Overture to Beatrice and Benedict.* Stadium Concerts Symphony Orchestra of N.Y. under Smallens. DL 4034.

Mozart Overtures Vol. 2. Berlin Philharmonic Orchestra under Lehmann. DL 4036.

Wagner: *Ride of the Valkyries.* Wurttemberg State Orchestra under Leitner and *Preludes to Act I and III from Lohengrin.* Berlin Philharmonic under Jochum. DL 4030.

ESOTERIC — *"El Pili" Flamenco.* Jimenez (cantador), Escudero and Velez (guitars). ES 2001.

EMS — **Farnaby:** *Canzonets and Virginals Music.* Oriana Singers under Hobbs. Blanche Winogron (virginals). EMS 5.

RCA VICTOR — **Bach:** *Well-Tempered Clavier, Book II, Preludes and Fugues Nos. 9-16.* LM 1708.

Mozart: *Concerto No. 10.* Amparo and José Iturbi (duo-pianos). And *Concerto No. 20.* José Iturbi (piano) with RCA Victor Orch. LM 1717.

Beethoven: *Symphony No. 4 & Schumann: Symphony No. 4.* San Francisco Symphony Orchestra under Monteux. LM 1714.

LONDON — **Elgar:** *Introduction and Allegro for Strings and Serenade & Vaughan Williams: Fantasia on a Theme by Thomas Tallis and Fantasia on Greensleeves.* Strings of the New Symphony Orchestra under Collins. LL 583.

MONTILLA — *Musica de Espana.* Orquesta de Camara de Madrid under Argenta. FM LP 6.

URANIA — **Dvorak:** *Slavonic Dances (Op. 46 and 72 complete).* Czech Philharmonic Orchestra under Talich. 4 sides, URLP 604.

WESTMINSTER — **Bach:** *Brandenburg Concerti No. 1 and 6.* London Baroque Ensemble under Haas. WL 5172.

Franck: *Prelude, Chorale and Fugue and Prelude, Aria and Finale.* Joerg Demus (piano). WL 5163.